Co-operative Farming
and
Individual Farming
On Co-operative Lines

by

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PUBLISHER'S PREFACE

THE author, Dr. Otto Schiller, Professor of Agricultural Economics, Stuttgart-Hohenheim, Germany, served in two half-year assignments in 1953 and 1954-55 and for a third time during the first months of 1956 in West Punjab (Pakistan) on behalf of the Food and Agriculture Organization of the United Nations as an expert in co-operative farming. The conclusions drawn from his first-hand studies and consultations resulted in two reports which were submitted to the Government of Pakistan by FAO. The first report, bearing reference number FAO/ETAP 228, was entitled "THE RE-ORGANISATION OF INDIVIDUAL FARMING ON CO-OPERATIVE LINES" and the second, reference number FAO/ETAP 414, "THE PRACTICAL IMPLEMENTATION OF REORGANIZING INDIVIDUAL FARMING ON CO-OPERATIVE LINES". A compilation of both reports has been published by the Punjab Co-operative Union, Lahore.

In view of the possibility that Dr. Schiller's ideas would be of interest to other countries with farming conditions similar to those prevailing in West Punjab, FAO asked for the authority to distribute the two reports in a general way, and the Government of Pakistan kindly consented.

During the assignments in West Punjab, Dr. Schiller paid several visits to some of the Indian States for studying the agricultural conditions in the country. As a result of such studies, he came to the conclusion that the proposals which he framed for West Punjab could, with certain modifications, be made applicable also to East Punjab and some other States of India. For the purpose of facilitating further study of the question in India, Dr. Schiller consolidated his two reports and rephrased them with Indian conditions in mind. The present treatise in Part 'A' is based on

the author's studies in India whereas in Part 'B' and in the appendices he has mainly drawn upon the material referred to above.

New Delhi
1-3-1957

B. J. PATEL
Hony. Gen. Secretary
All India Co-op. Union

FOREWORD

This valuable study, "Co-operative Farming and Individual Farming on Co-operative Lines", appears at a timely moment. During my recent visit to India, I came across few, if any, who appreciated the possibilities of co-operative farming on an individual basis. To most, co-operative and collective farming seemed to be synonymous. Collective farming is certainly the form that has everywhere attracted most attention, but the experience of such countries as Italy and Israel shows that it is not the only form. It is well that this should be recognised in India because collective farming is a very difficult form of co-operation and makes little appeal to the peasant proprietor. We should be grateful, therefore, to Mr. Otto Schiller for showing us that co-operative farming can also be done on an individual basis and that in this form it can perhaps be usefully adapted to Indian conditions.

April 10, 1957. MALCOLM DARLING

Part A

CO-OPERATIVE FARMING

CHAPTER I

EXISTING CO-OPERATIVE FARMS IN INDIA

IN India in the last few years co-operative farming as a problem and as a task has gained a growing importance in public discussions. Under the First Five Year Plan the promotion of co-operative farming societies for medium and small size farmers was an integral part of State policy. An official report says: "The ultimate aim of policy is to work out a co-operative system of land management in which the entire land and other resources of the village will be so managed and developed as to increase and diversify production and provide fuller employment to all the people working on the land[1]".

Grants are given to State Governments towards meeting half the cost of additional administrative and supervisory staff, which may be employed by such State Goverments for running the Scheme and in educating agriculturists in methods of co-operative farming. The other half of the cost is borne by the State Governments themselves. It is reported that there are difficulties for the introduction of co-operative farming due to the attitude of the agriculturists. It has also been stated that a favourable atmosphere for the growth of co-operative farming has not yet been created.

In the Second Five Year Plan it is proposed to carry out a large number of experiments in co-operative farming and to provide some funds for meeting organisational and training expenses. According to the latest information there are nearly 1,243 so-called "Co-operative Farming Societies" in existence in India, with a total area of 1,81,800 acres. The reported figures show that at present the State with the greatest number of co-operative farming societies is Bombay where 303 of them are recorded. A relatively great number of co-operative farms also exist in Punjab and Uttar Pradesh, namely 273 and 133 respectively. In the other States co-operative farms are represented by numbers less than 100. But only in two States (Himachal Pradesh and Andamans) up to now no co-operative farms exist.

In the reports it is stated, however, that it would not be correct to assume that in all these societies land is pooled or jointly cultivated. In a number of States societies which are allotted land individually but are practising better farming methods such as distribution of seeds, fertilisers, etc., are also classified as co-operative farming units. To judge the possibilities of co-operative farming under the Second Five Year Plan it is necessary, therefore, to clarify first the terminology.

1. United Nations: *Progress in Land Reform*, New York, 1954. p. 247.

Chapter II

VARIOUS TYPES OF CO-OPERATIVE FARMING

NOT only in India but also in other countries the term "co-operative farming" is not always used in a uniform sense and there is a lot of confusion and misunderstanding in this respect. The lack of clearness is partly due to the fact that in one case the form of land tenure whereas in the other case the form of farm management serve as distinguishing criteria. Both criteria, however, do not completely go together. If the land of a co-operative society is used in a purely individualistic way, this cannot be called co-operative farming. Neither can it be called co-operative farming if a co-operative society runs a large-scale farm in the usual way with hired labour. On the other hand, co-operative farming can be executed on co-operative land, State land, communal land or private land. If co-operative farming alternatively is understood as a form of land tenure or as a form of farming, one can hardly come to a clear definition. Apparently in the proper sense of the word it means a type of farming, namely, that type of farming in which the farming procedures are carried out co-operatively.

But even as a form of farm management the term "co-operative farming" is not always used in the same way. In modern literature, generally co-operative farming is understood as a form of farm management in which the land is used jointly. In India for this type of farming a distinction is made between "joint farming" and "collective farming". It is called "co-operative joint farming" in cases where the ownership of the land which is pooled together is preserved as a title and the value of the land contributed is one of the factors which is taken into account when the income is shared. It is called "co-operative collective farming" in cases where, in addition to land, all other resources of the members are pooled together and the ownership of land disappears in so far as the farm income is divided among the members only according to the work done by each member. We may accept this terminology, but should be aware that these terms are not used in the same sense everywhere and often both words have the same meaning.

We should make it clear, however, that by using the term "collective farming" we do not want to mix it up with collective farming under the Kolkhoz system in communist countries. A joint or collective use of land has only in that case a co-operative form, if it is based on the well known principles of a genuine co-operative society. This is usually not the case with the Kolkhoz farms in communist countries. In these

neither is voluntary membership sufficiently secured nor are the democratic principles of self-determination and self-administration actually materialized. Collective land use under the Kolkhoz system cannot be properly called co-operative farming. On the other hand collective farming which is not connected with a Kolkhoz system, as for instance in Israel or Italy, may be called a form of co-operative farming.

As distinct from co-operative farming with joint or collective use of land, there exist forms of co-operative farming with individual use of land. Here we can also observe a great deal of confusion. When the one or the other farming procedure is carried out co-operatively, as for instance co-operative supply of seeds or fertilizers, co-operative threshing or co-operative use of male breeding animals, this cannot yet be called co-operative farming. The application of co-operative methods in the sphere of agricultural production can be called co-operative farming only if *most* of the farming procedures are carried out co-operatively, or at least bound in the way of their execution by co-operative agreements.

On the chart following on the next page the various types of farming are illustrated to show what types can be classified as co-operative farming and what types cannot. To analyze, on the basis of this suggested terminology, the co-operative farms existing in India is difficult because there are no exact data available of how the various types of co-operative farming societies are represented in the total number. Figures which relate to 1954-55 and partly to 1953-54 show that out of a total of 917 co-operative societies there were 496 of the collective farming type and 86 of the joint farming type. Of the rest 238 were better farming and 97 tenant farming societies. It may be anticipated, therefore, that out of the total number of 1,243, as recorded for the present time, atleast 60 per cent are actually co-operative farms. It shows that already at present co-operative farming has not only theoretical interest but is of some practical importance for India's agriculture. It seems to be justified, therefore, that in the programme for the Second Five Year Plan the appraisal of the possibilities for a further expansion of co-operative farming in the country should play a significant role.

VARIOUS TYPES OF FARMING

Unorganised Individual Farming						Co-operative Farming				Kolkhoz Farming
						INDIVIDUALISTIC TYPE		COLLECTIVISTIC TYPE		
No Farming Operations Co-operatively			Single Farming Operations Co-operatively			Most Farming Operations Co-operatively		All Farming Operations Co-operatively		
						Individual Plots		*No Individual Plots*		
Credit societies	Supply and marketing Societies.	Processing societies.	Few multipurpose societies.	Tenant farming societies.	Part of better farming societies.	Part of better farming societies.	Co-op. society for improved individual farming (in experimental stage).	Joint farming societies (land pooled, ownership preserved).	Collective farming societies (land and other resources pooled, ownership not preserved)	No Real Voluntariness.
Most multipurpose societies.	Better living societies.	Others.	Co-op. farming societies		Societies for co-operative use of machinery.					No real self-administration.
										Collective farming societies.

Chapter III

PROSPECTS OF CO-OPERATIVE FARMING IN NEW SETTLEMENTS

TO come to the right conclusion it is necessary to distinguish from the beginning between the adoption of co-operative farming in new settlements and the introduction of co-operative farming in old villages of the traditional peasant structure. In world literature dealing with the problems of co-operative farming mostly the fact is overlooked that nearly all examples of co-operative farming outside the communistic orbit are of the first type, namely cases where new settlers have been settled down on the land as a co-operative group. It is hardly possible to show any examples that peasants in an existing old village have voluntarily given up their individual use of land and have pooled their land for joint utilization. This seems to be true also for India. If so, it is quite surprising that so much is expected from the introduction of co-operative farming in this country. Certainly, the actual problem is whether progress of small cultivators in the old villages can be achieved by the methods of co-operative farming.

The experiments made in India with co-operative farming in new settlements are not yet recorded in detail. It must be admitted that these experiments are still in the initial stages so that it may be premature to arrive at any final conclusions. Observations made on a few co-operative farms seem to indicate that some of them are functioning for the time being in a satisfactory way. There are examples of refugee-farmers tied together by a common destiny, who were settled as a group on land which was jointly reclaimed by them and then also cultivated on a joint basis. In the first years their mutual ties were strong enough to allow for equal sharing in the profits of the farm without recording each member's work. However, they soon found that equal shares diminish individual interest in the work. Then they divided up the co-operative farm into a number of groups sharing in the profits according to the yields of their respective sections.

It shows that in the long run one will probably come to the same conclusion as is drawn from experience of co-operative farms in other countries, namely, that exact records of each member's work are needed to secure satisfactory work. This, however, requires additional personnel for recording and book-keeping and increases considerably the administrative expenditure. It has to be considered whether this disadvantage and the lack of personal attachment to the soil are sufficiently compensated by the

technical advantages of co-operative farming, with regard to large-scale operations. If this is not the case it may be found advisable to have the land of the co-operative farm allotted to the members for individual use and eventually for individual ownership.

The land allotment in such cases could be made in a way which facilitates the co-operation of the members in farming operations and thus preserves many of the technical advantages of joint use of land. This would be the case, for instance, if the sections of the co-operative farm according to crop rotation would be preserved while allotting to each member a plot of land in each of the sections. The pattern of field arrangement which evolves in the case of such types of land allotment and the far-reaching possibilities to combine individual use of land with a high degree of co-operation in farming operations has been described by the author in the *Journal of the Indian Society of Agricultural Economics, Vol. V, No. 2 August* 1950. Especially for the economy of water in irrigated areas the given advantages may be quite essential.

Certainly with regard to ownership this would mean land allotment with a certain degree of fragmentation. But there are only two alternatives: consolidated ownership with fragmented cultivation, or consolidated cultivation with a certain fragmentation in ownership. It has to be considered what alternative serves better the purpose in view.

It may be expected, however, that in most cases the members of a co-operative farm considering the change over to individual use of land will prefer to get the land allotted in a consolidated form. But even in this case it is possible to have the land allotment arranged in such a way that some co-operation in the farming operations of the members can be maintained. A pattern of field arrangement as described in Chapter X b and illustrated by Map 2 would allow, for instance, the adoption of a common crop rotation and other co-operative measures in farming operations.

With regard to new settlement activities in India, apparently, there are significant possibilities for the adoption of co-operative farming methods. It will depend upon local circumstances and the attitude of the settlers concerned whether, in the one or the other case, preference will be given to joint use of land or to individual land allotment with other forms of co-operation in farming operations or even without any kind of co-operative farming. It can be expected that with the progress of land reform in the Indian States new settlement activities will gain greater importance. This is particularly true with respect to the newly imposed ceilings on agricultural holdings. It has been recommended that the surplus areas should be operated through co-operatives where they are in fairly sizeable blocks.

Farmers with uneconomic holdings below the basic level should be admitted into these co-operatives on agreement to pool their lands [1].

In more detail the Reorganization Committee of the Land Reform Panel set up by the Planning Commission has made far-reaching suggestions for the introduction of co-operative farming on a large scale. It has been recommended that lands, which become available after the imposition of the proposed ceilings on holdings and Government waste lands should be pooled for purposes of co-operative farming. All new colonies to be operated by landless agricultural workers should be based on co-operative farming. Furthermore, holdings below the floor level, which cannot be cultivated profitably, should also be brought into a co-operative pool. With the imposition of a ceiling on land holdings and the reorganization of holdings below the floor, according to these recommendations, there will be three different types of farms in India:

(i) Co-operative farms based on surplus and other Government land together with land brought into the pool by voluntary accession of farmers,

(ii) Farms based on lands acquired by the imposition of minimum holdings. These will be contiguous to the first variety and efforts will be made to run the two as one co-operative unit,

(iii) Peasant farms of a size above the floor, which can be managed as independent units. These will, however, be encouraged to join co-operative farms on a voluntary basis.

The Committee did not lay down any particular methods of co-operative management but indicated that there is a choice between three different types of management.

Measures of land reform, which are going on in the Indian States may have a great importance for economic and social progress in rural areas. Where such measures result not only in a change of land tenure but also in new settlement activities or rearrangement of fields it would be the best opportunity to start with a new type of progressive farming on co-operative basis. This does not mean, however, that the land in new settlements should necessarily be allotted collectively. In many cases the settlers will prefer to have the land allotted in separate plots rather than to be shareholders of a common allotment. But, as mentioned before, land allocation can be made in a way, which facilitates the co-operation of the settlers in farming operations.

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1 Government of India: Planning Commission, *Second Five Year Plan, A Draft Outline*, New Delhi, February 1956, page 80.

But on the whole, in the planning of agricultural progress within the frame-work of India's Second Five Year Plan new settlement activities and the resulting possibilities for co-operative farming can play only a subordinate role. The main target of agricultural planning is certainly the promotion of agricultural progress in the old Indian villages over 5,00,000 of which are in existence. What co-operative farming can possibly contribute to the development of India's agriculture is, therefore, mainly a question of its suitability for adoption in old villages rather than in new settlements.

CHAPTER IV

PROSPECTS OF CO-OPERATIVE FARMING IN OLD VILLAGES

AS stated before, there are hardly any examples to be found in any country where in old villages of the traditional peasant structure the agriculturists voluntarily i.e. without interference from above, gave up their individual use of land and pooled their lands together for joint farming. It would be unrealistic to expect that this can happen in India on a large scale within the next few years. Obviously farmers in India are to a high degree individualists as most farmers in other parts of the world. Co-operative farming in the form of joint or collective use of land may, therefore, have little chance of being adopted in the old villages.

This does not mean, however, that no possibilities exist to promote agricultural production and farming techniques of small cultivators by co-operative methods. If co-operative farming is attracting so much attention in the leading circles of the country it is due to the right conviction that for the progress of the masses of small cultivators the co-operative principle has to play a predominant role. The Co-operative Movement as developed in India since the beginning of this century has already made a valuable contribution to agricultural progress in the sphere of credit, marketing and supply and some other activities. It has to be examined very carefully whether co-operative activities can also be extended to the production sphere, i.e. farming operations without merging the holdings of small agriculturists together, and without affecting their private ownership of land and their personal initiative and attachment to the soil. The point is to find out what actually are the expected advantages of co-operative farming and whether these advantages, at least to a certain degree, can also be achieved by combining co-operative methods with individual use of land.

For India, the problem of co-operative farming is of particular interest in connection with the great efforts made in the last few years to promote rural uplift by Community Projects and National Extension Service. These activities include also the agricultural side of rural progress and in some project areas during the first stage of extensive development work, they have shown remarkable achievements. The methods adopted, such as individual and mass contacts, demonstration fields in selected small holdings, demonstration of sample farms, agricultural fairs and exhibitions and other

forms of advice and enlightenment, in many cases have yielded good results, when organized in the right way and guided by capable men. But, of course, these possibilities are restricted since many of the agriculturists, even if advised and convinced, cannot use the recommended progressive methods due to their financial weakness. Furthermore, the funds and activities are reduced when the development period of 3 or 4 years has elapsed. It has to be considered, therefore, whether additional efforts can be made to promote agricultural progress by mobilizing the owned resources of agriculturists and using co-operative methods. If the work of National Extension Service would be combined with co-operative activities extended to the production sphere, it may be possible to find a permanent and effective basis for the promotion of agricultural progress.

We can observe that, for instance, in irrigated areas a certain form of co-operation between the cultivators for the joint use of water or for joint ownership of the wells is an old tradition and has proved to be useful and effective. Furthermore, we know that the usual form of co-operation in credit, supply and marketing was from the beginning also not known to the people but nevertheless, with considerable support from the State and direction from above, it has found its way to the Indian villages and is still advancing. The same could probably happen with some forms of co-operation in farming operations. If it would prove equally advantageous for the cultivator as other co-operative activities, his mental reservations may gradually disappear. Enlightenment and education are a basic prerequisite to attain this aim.

Experts, who advocate the introduction of co-operative farming, expect that this type of farming will lead to modernisation of agriculture and thus increase its production. If co-operative farming is combined with joint use of land, certainly the great disadvantage of fragmentation would disappear, which, under the present agrarian structure in many parts of India, is one of the biggest obstacles to agricultural progress. The utilization of the land would be executed in big units which allow the full use of modern machinery and the adoption of improved agronomic methods. We should be aware, however, that the pressure of population on the land will not be diminished by co-operative farming itself. It may even become more evident, that with big field units and modern techniques the demand for human labour might decline.

This is one of the reasons why under the conditions of overpopulation mechanisation of agriculture should be used and directed very carefully. It means that the advantages of mechanisation are not a sufficient justi-

fication for the introduction of joint farming. In this respect the present conditions in India are quite different from those existing in Soviet Russia nearly 30 years ago, where one of the reasons for the introduction of collective farming was the belief that it is a prerequisite for the execution of a huge programme of industrialisation, with its increasing demand for human labour. Industrialisation is progressing in India and is expected to be accelerated in future. But in a country where most of the rural areas are overpopulated, it is likely that for many years to come industry's demand for labour can be covered by the existing surplus population and there is no economic justification in creating a supplementary labour supply through the mechanisation of agriculture.

In the present stage mechanisation and big machinery will not play a decisive role in the progress of agriculture in India. But there are other means of progressive farming, which are expected to be adopted with the introduction of co-operative farming, such as improved seeds, fertilizers, improved crop rotation, effective plant protection etc. It is true that these progressive methods can be promoted only very slowly, if the small cultivator, especially the illiterate one, has to be approached individually. Progress might be achieved more easily and quickly if co-operative efforts are made to raise at once the agronomic level of a whole group of cultivators.

But it is a mistake to believe that the advantages of large-scale operations can be brought to the small cultivator only on condition that he gives up his independence and merges his holding with others to make a big managerial unit. Another mistake is to believe that the main advantage of large farms as compared with small holdings is represented by big field units and corresponding large-scale *farming* operations. To do so is to overlook the fact that the managerial functions of a large farm, apart from farming operations, include many other things such as planning, financing, investments, supply and marketing. All these other functions, which contribute essentially to the advantages of large-scale operations can, however, be carried out co-operatively without merging the small holdings. Even the advantages of large-scale *farming* operations can partly be brought to the small cultivator who is carrying out his farming operations individually in consolidated small holdings but who is co-ordinating them with other cultivators on a co-operative basis. If the small cultivators could gain most of the assumed advantages of co-operative farming without giving up their individual plots of land and without losing their economic independence, they might easily be ready for co-operation.

Generally experts, who advocate joint farming, have in mind that in contrast to what happened in Soviet Russia, the ownership of land should be

preserved at least as a title. But it is still questionable whether a legal title to a piece of land, which still exists in the records but has in fact disappeared as a visible unit in the fields, can provide the same incentive as real possession of the land, even if the profits of co-operative farming are shared according to the assessed value of the land contributed by each member.

As voluntariness has to be the basis for co-operative farming, we have to consider at first whether the mentality of the cultivators themselves is of such a nature that we can expect from them the relatively high degree of co-operation needed for co-operative farming. Since this is normally not the case we may expect better results if co-operative farming can be combined with individual use of land.

It should also be considered that the introduction of joint or collective farming would also have some implications outside the economic sphere. Apart from all political considerations, we should be aware that with joint or collective farming the independent farmer with his attachment to the soil and other moral values would gradually disappear and a new type of agriculturist would come into appearance.

As mentioned before, exact records of work contributed by each member are needed to make collective farming efficient, which in turn means relatively high administrative expenses. All this can be avoided if co-operative farming is organized on the basis of individual use of land. Under the latter system, every member of the society gets remuneration for the work done by the natural way of harvesting the yield of his land.

Looking for examples of co-operative farming in other parts of the world we may omit the communist countries because there exceptional economic conditions prevail which cannot be compared with the conditions in India. But there are examples of co-operative farms in the non-communistic world—some of them much older than the Kolkhoz system in Soviet Russia—as, for instance, in Mexico, Israel, Italy, U.S.A. and even in England and Germany. The results of these co-operative farms are not very encouraging. They show that under normal economic and psychological conditions and without outside help co-operative farming has not proved its superiority as compared with individual farming.

Not only in Soviet Russia, but also in other countries, where collective farming has been practised, tendencies have been evidenced for a partial individualization of collective work. To achieve higher productivity, it is thought desirable to take into account not only the quantity and quality of each member's work when ascertaining the exact remuneration, but also its actual results in terms of yields. For this purpose, in some cases

the fields are subdivided for cultivation in plots allotted to groups or families and the yields of these plots are taken into account for the final remuneration of members. In such circumstances collective farming comes quite close to co-operative farming with individual use of land. If it can be expected that experiments with collective farming in the course of years would develop in this manner, it would be another reason to start from the beginning with a new approach.

It has also been stated that in the long run only large-scale farms can provide the necessary quantities of food for a growing urban population. The example of Japan and some European countries shows, however, that the productivity per acre in small holdings can be as high, if not higher than in large farms. Generally speaking, it is not higher productivity per acre which enables the large farms to play a predominant role for the supply to urban markets but the fact that less population and mostly also less livestock are attached to the same acreage as compared with the area of small holdings. The introduction of co-operative farming would improve the supply to urban markets, only if it leads to higher productivity per acre or to a shift of population. Both effects, however, are not automatic consequences of co-operative farming but depend upon other factors which can exercise their influence also under the conditions of individual farming. Co-operative farming, as mentioned before, cannot provide a solution for demographic problems.

What can be expected from co-operative farming is a more equal distribution of agricultural population over the village area than is the case with unequal private ownership and individual use of land. To a certain degree the same effect will also be achieved by measures of land reform and ceiling on holdings. Furthermore co-operative farming, it is true, would offer greater possibilities for specialisation of agriculturists in the various branches of agriculture and animal husbandry. But even some of these expected advantages of joint use of land could also be attained, if agriculturists using their land individually would come to closer co-operation in their farming activities.

All these considerations may explain why instead of co-operative farming in its usual form, namely with joint or collective use of land, a new type of co-operative farming may be advocated, namely "*Individual Farming on Co-operative Lines*". This is not identical with the existing type of "better farming societies" mentioned above. If these up to now have not proved to be very successful in raising the level of farming techniques, it is partly due to the fact that they have not undertaken systematically planned activities to promote the individually performed farming

operations of their members. It seems, therefore, that for the promotion of farming techniques of small cultivators a new type of co-operative society with extended purposes and a more systematically planned approach to the problem will be needed.

The whole subject of co-operative farming, however, is not a problem which can be dealt with *in vacuo*; other co-operative activities must be taken into consideration as well. But in a country where small holdings prevail, existing co-operative activities can yield only a relatively slow progress and they cannot be considered as a remedy for such structural deficiencies as lack of individual resources, fragmentation of land, subdivision of holdings, overstocking of draught animals, insecurity of tenancy, etc. Whether the remedy can be found through some kind of co-operative farming is a question sufficiently important to be examined very carefully.

Part B

INDIVIDUAL FARMING ON CO-OPERATIVE LINES

CHAPTER V

INDIVIDUALISTIC TYPE OF CO-OPERATIVE FARMING[1]

THE belief that farming operations of individual agriculturists can be promoted by means of co-operation is encouraged by the fact that agricultural co-operatives have been functioning in India since decades, although up to the present time they have mainly to do with either credit, marketing or supply. It seems likely that through ordinary co-operative activities, especially of multipurpose societies, one or more aspects of the operations of individual cultivators can be promoted. But this is not the particular problem here; it is to examine whether farming operations as a whole can be promoted by co-operative methods without depriving the small cultivator of his independence, without affecting private ownership of land and without paralyzing private initiative. For this purpose a suitable organizational framework needs to be proposed. It is suggested to introduce a new type of co-operative society, which may be called a *co-operative society for improved individual farming.*

The essence of *individual farming on co-operative lines* may be described as follows: all functions, which cannot be executed in the limited boundaries of a single small farm, or are beyond the capacity of the small holder, such as planning including field arrangements and cropping scheme, the financing of investments, the keeping of large-sized equipment, the wholesale supply and marketing etc., should be turned over to the co-operative society for improved individual farming. All other functions of farm management, which can properly be executed within the boundaries of a single small farm should remain with the independent individual. In the following chapters the various functions of the recommended type of co-operative society are described in detail.

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1 The same terminology is used by Sir Malcolm Darling in his article in the *Year Book of Agricultural Co-operation* for 1953, page 201.

Chapter VI

CO-OPERATIVE PLANNING

IF say, a hundred small cultivators with an average of 5 acres per holding join together into a co-operative society for improved individual farming, it would mean that the society has to carry out certain managerial functions for an organisational unit of 500 acres. In so doing the society has to act in a similar way as a big landowner with a farm of 500 acres. The big landowner who wants to develop his land, firstly has to work out a plan of development, and also a management plan for each year. Secondly, he has to provide the financial means to implement the plan. He will need some long-term investments, adequate equipment, the necessary working capital, etc. The society when it takes responsibility for progressive farming will be charged with similar tasks.

In Appendix 1 recommendations are made as to the elaboration of a Village Agricultural Development Plan. First the villagers have to be asked what they can suggest to improve agricultural production and to increase yields. Their suggestions are to be supplemented by the recommendations of local officials, especially the local agricultural officers. The villagers themselves mostly will come to the conclusion that their knowledge of modern farming techniques is not sufficiently developed to indicate in detail all measures necessary for the progress in view. Whenever they agree to follow the advice of the local experts under the guidance of the village leaders conditions can be adjudged favourable for the establishment of a co-operative society for improved individual farming and the planning work can be started. Appendix 2 is a fully detailed development plan for a village in a dry area where supplementary water supply is the main prerequisite for progressive farming.

For the elaboration of the development plan the advice and help of the agricultural officers is indispensable. The development plan, being relatively a complicated matter, which requires much technical knowledge, will have to be worked out at the district level and then submitted to the General Meeting of the society. In the course of time the district officials will gain sufficient experience in this field so that they can avoid undue difficulties. On the basis of the long-term development plan a yearly farming plan will also be needed by the society. The bylaws provide that this plan has to be prepared by the Managing Committee and submitted to the General Meeting for approval. That the cultivators in their farming operations need the guidance of a development plan and a yearly farming plan seems undeniable, if they are to attain better techniques. Once they get accustomed to the new methods the degree of planning may well be reduced.

Chapter VII

INVESTIGATIONS ON THE SOCIO-ECONOMIC STRUCTURE

IF farming operations of small cultivators are to be re-organised on co-operative lines, it is necessary to know first of all the exact farming situation in the village concerned, to find out how many cultivators are actually tilling the soil in the village area, what part of the village area is cultivated by the owners themselves and what part is leased out to other owners or landless tenants. The existing statistics of the country refer usually to owner's holdings whereas the number and average size of cultivation holdings are not available in the ordinary statistical material. The village records, it is true, besides the owner, show the cultivator of each plot of land. But such data are not sufficiently reliable. The owners of land mostly wish to be shown as "agriculturists" not only for material reasons but also because of social standards. This is also true for non-cultivating owners who belong to other professions. In order to get a picture which more closely corresponds to reality it is necessary to have the village records checked on the spot with regard to who is actually cultivating which piece of land.

In Appendix 6 the results of such investigations in two sample villages are shown. In both cases it is revealed that the number of holdings of economic size (around 10 acres) is actually much greater than is apparent from the usual records of ownership. In the village B the number of holdings in the two categories of intermediate size (5–15 acres) increases from 35 to 58 when cultivation holdings are taken instead of ownership holdings, and the total acreage in these groups from 348 to 554; in the other village C the corresponding figures show an increase from 16 to 24 holdings and from 143 to 229 acres. Whereas, in the second village, 12 owners' holdings are shown with 2 acres or less; this whole group disappears, when cultivation is the criterion. In the first village the number in this group correspondingly drops from 18 to 8. The overall average size of holdings in the second village is 6.8 acres for ownership as against 9.3 acres for actual cultivation.

Although the figures of one or two villages cannot be generalized they may indicate the value of such investigations for the planning of agricultural progress. The figures of the sample villages, for instance, which are representative only for certain types of villages, indicate the following facts:

(1) The number of actual cultivators is smaller than might be assumed by taking the number of recorded agriculturists.

(2) A number of agriculturists with uneconomic holdings have additional income from other sources which in many cases represent the main source of income. Strictly speaking, they should be shown as non-agriculturists or part-time farmers.

(3) The percentage of agricultural population out of the total population is smaller than assumed, i.e. the shift of agricultural population to other professions has gone further than the present statistics suggest.

(4) The average size of cultivation holdings in typical peasant-villages is greater than assumed.

(5) A certain number of uneconomic holdings exist only on paper.

(6) The acreage under tenancy in typical peasant villages is greater than assumed.

The above conclusions are given with the necessary reservations. They are only meant as an indication of what can be expected by an exact socio-economic analysis of villages which may be representative for certain groups of villages and showing in particular the socio-economic structure of the peasantry, leaving out of the picture the big landowners.

Chapter VIII

CO-OPERATIVE FINANCING

AGRICULTURAL progress is to a large extent a matter of capital investment. Improved seeds and fertilizers, chemicals for plant protection, irrigation facilities, improved implements, modern mechanical equipment etc., can only be introduced if the necessary financial resources are available. The small cultivator, even if he is willing to adopt progressive farming methods, in most cases is unable to find the necessary capital for investment in his small holding. The existing co-operative credit societies do not contribute much to the solution of this problem. They comprise only a relatively small percentage of cultivators and the loans granted are mainly used for other purposes than for the improvement of farming techniques.

The small cultivator cannot be expected to provide the necessary investment for improvement of his farming technique. Some modern equipment such as tractors or tubewells, due to its large working capacity, is not suitable for a single small or even middle-sized holding. For other means of production such as fertilizers, improved implements etc., there is little prospect of their use in small holdings so long as cash money is needed to purchase them. For a loan, however, a single small holding generally offers an insufficient security.

All these difficulties can only be overcome, if the small cultivators are organised in an appropriate way. By the establishment of a co-operative society for improved individual farming a large number of small holdings could be combined into one organisational unit of adequate size for the use of every kind of modern equipment and providing a certain security for investment-loans.

In seeking a solution to the problem of how to provide capital it would not be right to expect it to come from the Government or other outside sources, to be utilized as subsidies for agricultural progress in new societies. Using a co-operative basis of financing it should be possible to mobilise the latent resources of the small cultivator which are represented by the insufficiently utilised fertility of his soil. Of course, small cultivators, even when joined together with others, are financially not strong enough to *start* this operation. They can, however, be given the necessary starting help if they are organized in a co-operative society for the purpose. Credit will be needed to make possible the initial investments. Such investments, made and controlled in the right way, must result in higher

yields thus enabling the societies concerned to recover the loans without reducing members' annual income which is already low enough.

Small cultivators, joined together for improved farming, can exercise much more initiative than the single small-holder who alone is too weak to raise his standard of farming techniques. He is accustomed to avoid as much as possible all expenses in cash. To assist him individually through investment-loans is risky because so long as he is living on the subsistence level he will use his additional production mainly for his own consumption.

When combined together in a co-operative society the small holdings should provide adequate security for the necessary investments. The society, when exercising certain rights in the guidance and supervision of the farming operations of its members, will be in a position to ensure the payment of instalments by collecting from the members in kind a part of the produce raised. As this method is well known to the cultivator it should encounter fewer difficulties than other forms of repayment. Through yearly instalments the funds employed for investment purposes would gradually be reimbursed and would then become available for new investments in other villages. What is needed is Government aid and initiative to start this movement. Once started, it should develop automatically with the help of the resources mobilized through it.

In addition to Government aid the financial means of the Co-operative Movement are to be mobilized as far as possible for the purpose. Taking into consideration that co-operative banks commonly can use their money only for short-term credits, a way has to be found to combine co-operative capital with contributions from other sources, and the best solution is considered to be a special Fund for co-operative agricultural progress. The suggested regulations for this "Farming Development Fund" are stated in Appendix 3. The main principles are:—

(1) Any funds afforded to the co-operative societies should not be for their free disposal but only for disposal on the basis of an agricultural development plan approved by the Board of the Fund. In the same way as the State controls the budget expenditure item by item so would the societies dispose of their funds only in accordance with the specific items of the development plan. Thus it would be ensured that the funds are used actually for the purpose in view.

(2) The development plan shall indicate the necessary expenditures and investments for a period of 5 years.

(3) As far as possible the funds (exception - working capital) should be used on a non-cash basis by payment out of the Fund direct to suppliers etc. This way the possibility of the misappropriation of funds would be restricted.

(4) Generally financial help to the societies should take the form of loans. There seems, however, to be justification for subsidizing such investments or expenditure of the societies as do not yield income e.g. godowns or expenditure for planning purposes and centralised services.

(5) It is recommended, at least for the initial stage, that loans be granted to the societies free of interest, or with a nominal rate, to encourage in this way in the first group of villages the introduction of progressive farming on co-operative lines.

(6) In principle the loans are to be given exclusively to the societies and not to individuals. The societies will use the loans partly for co-operative investments which benefit members or a group of members indirectly, e.g. tubewells, and partly for more direct benefits such as improved seeds, fertilizers etc. The society must recover the loans, therefore, from its members charging them the usual rate of interest.

(7) To aid the recovery of loans it is recommended that from the beginning co-operative marketing is organized.

(8) To restrict possible abuse of recovered funds, marketing and other operations for the recovery of loans are to be carried out as far as possible on non-cash basis by direct payments to the account of the society with the Bank.

(9) The funds are to be used for loans to members only in so far as their farming requirements are concerned and in accordance with the respective development plan.

(10) Gifts in kind to the Fund (e.g. tractors, fertilizers) should not be turned over to societies in the form of donations but should be charged at the usual price on ordinary credit basis. The payments made by the societies in respect of such loans would augment the capital of the Fund and thus would benefit other societies.

(11) For co-operative supply of improved seeds, fertilizers etc. on credit basis, the ordinary rules for such credit activities should be applied.

(12) All equipment supplied to societies through the Fund should remain the property of the Fund until fully paid off. This way the risk for the Fund will be reduced.

As regards the question of interest on loans to the societies, a low rate of interest of 4 per cent or less could be advocated. But the psychological effect of loans offered free of interest usually is much greater than the small amount represented by a nominal rate of interest justifies to expect. It must be considered that these loans are determined to serve exclusively as investments for the progress of agriculture. To rebuild agriculture with the help of the necessary investments is one of the predominant aims of national policy. It is justified that it should be achieved mainly by mobilizing the financial resources of the agriculturists themselves who will benefit from the progress in view. But it seems also to be justified that to a certain extent public funds are contributed for this important aim. Besides, of subsidies for non-income-yielding purposes, it can therefore be advocated, to give the loans to the societies free of interest or at a low rate of interest and to use governmental subsidies for this purpose so that the borrower would get the usual rate of interest. The society would charge to its members the usual rate of interest and would thus be helped to rebuild capital for new investments after the 5 years period has elapsed. The society would also have the possibility to exempt, if necessary, certain members, by a decision of the General Meeting, from the payment of interest.

Subsidizing the rate of interest for specific agricultural purposes is a well known method of agrarian policy in other countries also. Even, if the scheme, later on, should be expanded on a large scale it would not mean that the easy terms of loans offered by it would be disturbing the existing system of rural credit, because each village would get this kind of financial help only once and only for investment purposes.

As the loans shall be used only for farming requirements, it is necessary to draw a line between farming and personal requirements, which usually is not an easy task. In this case it will not be so difficult because by working out the development plan it must be decided beforehand for what purposes the loans can be used. The purchase of draught animals, for instance, may normally be a part of the development plan yet the purchase of milch animals would not. The bylaws of the societies in the suggested form permit credits to members only for the purchase of draught animals. Where the improvement of animal husbandry is an essential part of the development plan and can be achieved only by individual purchases of milch animals, the bylaws should be amended correspondingly. Anyhow,

expenses for private purposes as ceremonies etc. cannot be countenanced by societies using loans of the Fund. As soon as the societies have built up their own capital it is up to them to decide whether they want to take up the usual credit activities and to supplement the bylaws accordingly. It is recommended, however, at least for the beginning, that the activities of the new societies be strictly confined to such operations as are directly connected with progressive farming. It would do no harm, if besides the new societies, there existed for a time another society for ordinary credit activities in the respective locality.

For credit activities, of course, the main prerequisite is sufficient security. In the scheme here propounded credits will be given from the Fund to the societies and used by the societies for loans to members. The question is what security the societies can offer to the Fund and what security the members to the society. As outlined before, most of the credit sums would not be given to the societies in cash but in kind. As far as long-term investments are concerned the Fund would retain the property rights on the invested equipment. In case of default the equipment could be taken back although it would have a lower value due to depreciation. As provided by the regulations of the Fund other tangible security as, for instance, the pledging of land, can also be considered from case to case. For short-term investments as fertilizers, improved seeds, etc. the usual legal provisions to secure the recovery of such loans would be applied.

The liability of the members is restricted to four times the value of the share which is fixed at Rs. 10 for each five acres owned. This would mean for a 1,000 acres-village a liability of Rs. 8,000 not enough to cover the financial help which the society will need from the Fund. It should, however, be taken into account that additional security can be given as described in more detail in Appendix 3. It should also be realised that in case of default it would not mean that the money invested in a particular village is completely lost. The investments would in any event be of value in so far as they contribute to the improvement of agriculture. But in case they are not repaid they would then become a form of subsidy instead of a loan. It has been indicated already that it is not advisable to have agricultural progress financed on a subsidy basis. Whether the security offered by the suggested procedure is to be considered sufficient or not is a matter which depends on having confidence in the villagers and their leaders.

In principle not the whole process of improvement in farming techniques is to be financed by the funds secured from outside sources; these funds are intended only to help societies until they are able to finance further progress themselves out of their own resources. Normally a society

newly established for the introduction of progressive farming methods will need this kind of help for a period of about 5 years. It may be that some long-term investments will require a longer period for recovery, as for instance the purchase of a tractor, if it is not utilised to a sufficient extent (e.g. less than 1,000 hours a year). But a tubewell, for instance, in most cases might be paid off in 5 years. It should also be possible for the societies to make up in the course of 5 years their own capital to such an extent as to replace the revolving credit given for the purchase of improved seeds, fertilizers etc. and for working capital. State-help and self-help would thus be combined in the right way.

Calculations for the sample-village shown in Appendix 2 with a cultivated area of approximately 750 acres reveal a total requirement of Rs. 35,500. It may be estimated, therefore, that in normal cases a village with an area of 1,000 acres would require approximately a sum of Rs. 50,000. This means that for 20 pilot villages Rs. 10 lakhs would be needed. Out of that sum approximately 20 per cent should be written off as subsidies (salaries of special staff, centralized services, godowns, remittance of interest etc.) and as possible defaults. The rest should be repaid in not more than 5 years.

The objection that this kind of financial help may suffice for only a small number of privileged villages and that introduction on a large scale would represent an unbearable burden for the State budget and the co-operative banks may be countered by pointing out that Rs. 50 lakhs provided yearly in the course of 5 years would be enough to finance each year 100 new societies. This would mean 500 villages in five years, and in addition the repayments (less a calculated margin of 20 per cent) made each season would, as part of the Fund, be available to finance an even larger total number of societies.

This calculation indicates that with an amount of capital which is not out of proportion as compared with other State expenditures for the imporvement of agriculture, a relatively great effect can be achieved. It may be added that not all the villages appear suitable for the introduction of progressive farming on co-operative lines. Villages, which have already achieved a high standard of farming and intensive cultivation, villages with big landowners, villages with special problems, which can be solved only by extensive Government action (soil erosion, water logging, insaltination, etc.) and some other types can be left out of our considerations.

It is not finance so much as availability of qualified personnel and of capable local leaders and the effectiveness of educational measures which will determine to what extent progressive farming on co-operative lines can be adopted.

CHAPTER IX

CO-OPERATIVE MARKETING AND SUPPLY

FOR smooth functioning of the recommended new type of societies it is important to have marketing and supply from the beginning organized on co-operative basis. The bylaws of the societies provide that members shall agree to sell their surplus produce through the society. The construction of godown and storage facilities shall be an essential part of the development plans and should be concluded before the actual activities of the societies in farming operations begin. Disposing of the surplus produce of its members, the society will be in the position to secure at least, to a certain degree, the recovery of the sums credited to each individual member in the course of the season in the form of supplies, investments or services, and reduce defaults to a normal minimum. The society may also decide that a certain minimum of produce has to be delivered by each member for marketing purposes.

Co-operative supply of improved seeds, fertilizers etc. should be organized through the society from the beginning by dealing directly with the suppliers and with the help of godown facilities. It may be left to the members whether they will get the commodities on credit basis or pay in cash. It may be expected that co-operative supply organized on this basis will function satisfactorily and will help the cultivators to adopt improved measures. Since the practices of co-operative marketing and supply are known by the example of existing multipurpose societies these short remarks may suffice.

Arguments have been raised that with the progress in view difficulties in marketing of the additional produce may come or a decline in prices may result and upset the whole financial calculation. This is, of course, a problem which exists but it is not a particular problem of co-operative farming. Agricultural production due to its nature is always faced with the problem of instability caused by changing weather conditions. Thus the agricultural entrepreneur, be it an individual or a co-operative society, has to bear a certain risk on the market. In how far this risk can be diminished by marketing schemes and State measures is a question of agrarian policy and cannot be dealt with here. It may be mentioned, however, that the relatively low nutritional level of the population in India indicates the great possibilities, which theoretically are given, for increasing internal consumption of foodstuffs. If increased production is consumed by the agricultural population itself for raising its nutritional level

there would be no additional income to finance the progress in view. If, after the experimental stage, progress in agriculture shall be achieved on a *large* scale, it must be accompanied by a corresponding progress in other branches of economy, which increases the purchasing power of the non-agricultural population.

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CHAPTER X

ESTABLISHMENT OF FARMING UNITS [1]

(a) Combined With Land Consolidation and in Consolidated Villages

THE adoption of progressive farming methods is greatly impeded if the farming units are fragmented and very small. An appropriate field arrangement is an important prerequisite for progressive farming on co-operative lines. For the introduction of progressive methods in villages with small holdings predominating it is important that farming operations are executed in units of a proper size and shape. This does not mean, however, that with a new field arrangement progress will come automatically nor does it mean that in all cases this is the only way possible to achieve progress. There are villages where fragmentation of land does not prevail and where progressive farming methods can be introduced without a new field arrangement. This is the case, for instance, in all villages where there is not much fragmentation and where it is not the main obstacle to agricultural progress.

In fragmented areas, however, a society established for the improvement of farming techniques must also find a solution to the problem of fragmentation. Land consolidation is of great importance in this connection. But the field arrangement achieved by the ordinary land consolidation procedure is not fully satisfactory. It would serve the purpose of progressive farming on co-operative lines much better, if, apart from the legal aspects of ownership, the practical requirements of farming techniques were given more consideration in this procedure than is the case up to now. This would mean that simultaneously with the consolidation of ownership rights the village area should be subdivided as far as possible into proper farming units of regular shape and adequate size.

The establishment of farming units is meant for different purposes:

(1) The farming unit should be operated as far as possible under one cropping scheme and with one pair of bullocks;

(2) the units should be observed in case of tenancy agreements or other arrangements in farming operations so that greater stability may be achieved with regard to cultivation rights in the village area;

(3) the units should be maintained for farming operations irrespective of customary subdivision of land by inheritance.

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[1] For more details see Appendices 5 and 6 and Maps No. 1 and 2.

The proper size of a farming unit cannot be fixed equally for all villages and all conditions. It depends largely on the intensity of farming. The water supply and the working capacity of one pair of bullocks are other relevant factors. What is required is not a determination of the economic size of new holdings, as in the case of resettlement, but the minimum size of a farming unit for holdings already existing. This minimum should be fixed as low as possible to secure the greatest possible number of cultivators with one farming unit or more. Generally for East Punjab ten acres could probably be fixed as the minimum farming unit, taking into account the present intensity of agriculture. In other districts the minimum may be be lower than 10 acres. If the principle is correct that the farming unit must have the proper size - and it seems to be the only possible way for improved farming - then the obvious conclusion is that in some cases two, three or even four small cultivators should be combined together in one farming unit with their separate plots, called subunits, which they might or might not cultivate co-operatively.

Admittedly this combined unit can scarcely be called an economic one, in so far as it does not secure proper subsistence for the disproportionately great number of individuals attached to it. But no *farming* scheme, neither the one discussed here nor a full collective type, can change the proportion of rural population to the land available. This problem can only be solved by other measures such as industrialisation, development of cottage industries, family planning etc. What can be achieved by a farming scheme is an arrangement whereby the small cultivators, instead of working separately with inadequate resources on small plots of land scattered haphazardly, can cultivate co-operatively in proper farming units, permitting the adoption of improved farming methods which would raise the level of productivity and so ensure a higher income than before.

The aim in view is not a change in the principles of land consolidation but only a certain modification taking into consideration the requirements of progressive farming when the plan for the redistribution of land has to be worked out and agreed upon with the landowners. In many cases the farming units will consist of more than one plot in accordance with the different classes of soil and other practical requirements. This would not exclude the possibility of having the farming unit managed as one unit in so far as it should be cultivated under one cropping scheme and with only one pair of bullocks. Experience has shown that the slight degree of fragmentation, which still exists after a new consolidation, need not be an obstacle to progressive farming.

In villages which have been consolidated in former years without considering farming requirements the preconditions for the establishment

of farming units will be less favourable. But if new fragmentation, which appears in consolidated villages by customary subdivision of land in case of inheritance, has not yet gone too far, it will still be possible to carve out farming units also in such villages. For this purpose exact investigations are needed to find out who are the owners and cultivators of the different fields in the village area. In many cases the establishment of farming units in villages which are already consolidated would not mean more than having an already existing status fixed. In other cases it would mean the combining of two or more cultivators with their existing plots into one unit. It is essential that after the establishment of farming units, the cultivators by intensive advisory work are induced to observe, for the cultivation of the new units, the appropriate rules.

Since with the ordinary land consolidation procedure in many cases landowners are getting their land alloted according to land classification in more than one plot it is not avoidable that a number of farming units will also consist of more than one plot. It depends upon the natural conditions in the different parts of a village areà whether in such cases the farming unit can be cultivated under one crop rotation. This will not be possible, for instance, if we have to do with irrigated and unirrigated land, or with sandy and with clay soil in the same farming unit. But still it will be possible to have an appropriate cropping plan adopted for the whole unit and to observe the proper rules by operating it.

If two or more cultivators are combined in one farming unit it does not mean that necessarily they have to work on a joint basis. The farming unit in such cases will be subdivided into subunits which each of the partners can cultivate separately, if he wishes to do so. If we have to do not with the combination of already existing land allotments but with new allotments it is advisable to arrange the subunits as far as possible in a lengthwise manner so that each cultivator is represented with his plot of land in all the fields of crop rotation. The same applies for units consisting of more than one plot. If newly established units with more than one plot later on, by inheritance or otherwise, have to be subdivided, in most cases it will be advisable to subdivide each plot instead of taking the existing plots as the basis for subdivision. This also depends upon the crop rotation. Anyhow, the cultivators in a combined unit should be advised to observe in their separate plots belonging to the same farming unit an adequate cropping scheme in order to facilitate for their own benefit, irrigation, plant protection, etc.

(b) Prior to Land Consolidation

Land consolidation of course is a very slow process. Therefore, in places where the cultivators are interested in obtaining better conditions

for progressive farming and no personnel for immmediate consolidation is available the land use rights could be consolidated first into proper farming units, leaving the ownership rights, for the time being, within the old boundaries as recorded in the register.

The landowners of the village concerned could be asked to put their land into a common pool administered by the society for the immediate purpose of redistribution in farming units. Such a pooling of land would affect only its usage, the titles of the proprietors remaining untouched. This means that the land would be leased to the society which in turn, would lease it out again to the actual tillers of the soil. Pending formal tenancy agreements, the society would enter only with the consent of both parties. The society would function as a type of land-lease society operating both as lease-holder and as lessor for the land use transactions of the members.

Surrendering of cultivation rights is only meant for immediate redistribution in the same way as in the ordinary land consolidation procedure the ownership rights are surrendered to a pool for redistribution. The cultivators would not give up their cultivation rights but would get them back on equal terms on another piece of land. The procedure of land redistribution and layout of fields in this alternative case could follow more systematic lines than is possible with the ordinary land consolidation. The desirable solution for it with regard to the requirement of progressive farming is indicated in Map 2.

Once the cultivation rights have been surrendered to the society a special committee would have to be set up to undertake redistribution. All the farmers of the village would be asked to apply to the society for new cultivation rights. Everybody should have the right to get as much land for farming as he had before. Actual cultivation by individuals changes significantly in the course of years, and may often be influenced by extraneous factors. To make cultivation as recorded in the register the basis for determining new cultivation rights may not in all cases prove satisfactory. An alternative solution would be to take the average area cultivated in the course of the last three years including land left fallow as the basis for new cultivation rights. Most of the records are accurate enough to permit this procedure, provided a qualified person is available to carry it out.

In principle, while actual cultivation should be the basis for new rights, a farmer should be free to apply for less or more land than he cultivated before. He may apply for less land, for instance, if a son has left the family for military service, or if for some other reason the working capacity of the family has been reduced. He may apply for more land, if he wants to cultivate a larger area and proves his capacity to do so. His application of course

could be taken into consideration by the society's committee, only when other members did not claim their full rights, thus leaving surplus land for redistribution. The same would apply to landowners, who reside in the village, but who did not cultivate any land in the preceding year. They could apply for an allotment of right to land usage, but their application could only be granted if surplus land is available. Normally, it may be assumed that in a country where the rural population has a great interest in land use, each cultivator will claim his full rights.

Ownership of land would not be directly affected by the new arrangement. To cultivate the land owned is, of course, a very important part of ownership rights. The landowner would be asked to surrender this right to the society, a sacrifice of lesser importance if the landowner does not cultivate the land himself and does not intend to do so in future. In such cases the landowner would only be renouncing the right to select the cultivator of his land. Instead it would be the co-operative society which would decide to whom the land is to be given for cultivation purposes. In most cases this should be an advantage rather than a disadvantage for the landowner. He would have to deal not with different tenants of uncertain reliability but with a co-operative society, which would guarantee him his full rent without delay. As members of the society the landowners would be in a position to take care of it.

It will be the small landowner, cultivating his own land who will suffer an undeniable disadvantage by surrendering his cultivation rights to the society because he will be obliged in many instances to cultivate someone else's land while his own land will be cultivated by others. As a cultivator of another's land he will have to pay the ordinary rent to the society and as a proprietor of his own land he will get his rent from the society. To lessen the small landowner's disadvantage the separation of cultivation rights from ownership rights should be minimized as far as it is possible when redistribution is effected and at a later date the ownership rights should be arranged in conformity with the new cultivation holdings.

In a country where tenancy plays a big role and a considerable part of the land is not cultivated by the owners themselves a partial separation of cultivation and ownership rights already exists and will continue to exist unless a great change takes place in land tenure. Nevertheless, the extended separation of cultivation and ownership rights as recommended here in such alternative cases should be restricted as far as possible to a limited period of time of, say, five or ten years. It is only meant as a possible solution for such cases where an immediate rearrangement of fields is required in order to start progressive farming and no personnel is available for the ordinary

land consolidation procedure. There are villages, for instance, where most of the land or even all the land is owned by non-cultivating owners so that the suggested arrangement may not encounter great psychological difficulties. In other villages the agriculturists from the beginning may not be willing to surrender their cultivation rights for immediate redistribution, But it may be expected that the psychological obstacles will be gradually removed, when by practical examples the advantages of a new field arrangement are demonstrated to the agriculturists.

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Chapter XI

MAINTENANCE OF FARMING UNITS

IN a country already over-populated and with a high birth rate the conditions for progressive farming in *one* respect are deteriorating from year to year, namely, through subdivision of land by hereditary customs. With the great increase of population this leads to a still advancing fragmentation of land and decrease in the size of holdings. Thus the results of land consolidation to a large extent can be upset in a relatively short time. Nevertheless in many cases the actual subdivision of land does not go so far as is shown in the land records. It may happen, for instance, that the heirs deliberately avoid actual subdivision by cultivating the land on a joint family basis. Thus the subdivision may be postponed for one generation. Such observations are another indication that the very crucial problem of advancing fragmentation can possibly be solved or at least mitigated by a certain separation of ownership rights from cultivation rights.

The recommended establishment of farming units - be it combined with land consolidation, be it in consolidated villages, be it prior to land consolidation - is also meant for the purpose to seek a solution for the problem of advancing subdivision of land. It is necessary to secure the maintenance of existing or newly established farming units by corresponding regulations. The suggested model bylaws of the new type of co-operative societies provide for such regulations.[1] Under these provisions the Managing Committee is charged with the task of advising members regarding tenancy arrangements of their land or any changes in rights of cultivation thereon and of supervising the maintenance of units and subunits by members. It means that changes in cultivation rights caused by tenancy agreement or inheritance should, as far as possible, be kept within the boundaries of established farming units or subunits so as to avoid undue splitting up of land. The required maintenance of farming units does not exclude, of course, the possibility of necessary changes provided that the subdivision of the village area into farming units as a whole is preserved.

It is felt, however, that in the long run and generally speaking, this problem cannot be solved on a co-operative basis but should be the subject of new legislation. Without affecting hereditary customs such legislation should prescribe the minimum size under which a plot of land cannot be physically subdivided even though it may legally be possible to do so in

1 See Appendix 4.

the records. This law should provide rules for the maintenance of farming units in the same way as is provided for in the suggested model bylaws. Such provisions would refer to consolidated villages and ensure that the economic advantages of land consolidation - carried out at considerable public expense - are not upset again by subsequent subdivision.[1]

Although in a number of States, as a part of legislation relating to consolidation of holdings, measures for preventing fragmentation have been adopted, it is reported that frequently such measures are not adequately enforced. It is realised, however, that provisions against the creation of fragments or their further splitting up by transfer or partition and regulation of the transfer of existing fragments are essential in the interest of agricultural development and should be enforced with the active association of village panchayats.[2] On the other hand any kind of primogeniture is impracticable, as long as other employment outside agriculture cannot be offered to sufficient numbers of co-heirs. Although under conditions of over-population subdivision of holdings cannot be avoided, in villages where progressive farming shall be started the suggested co-operative measures could possibly help to mitigate its adverse consequences as far as possible.

For the time being it may be recommended, therefore, to have the respective co-operative society for improved individual farming charged with the task of regulating through a special committee the cultivation rights of its members. In the suggested model bylaws this provision has not been made a binding rule but a matter of consultation by the committee of the society with its members. In case of any change in tenancy arrangements or in rights of cultivation the members should consult the society. It depends upon the educational level of the members and their co-operative spirit whether they will follow such advice or not.

The guidance and supervision over cultivation rights would be more effective in such villages where the agriculturists agree to surrender their cultivation rights to the society and to have these rights, even after redistribution, formally vested in the society (see Chapter Xb). In such cases the cultivators should apply to the society, if they want any

1 Legal restriction of subdivision in kind is known, for instance, in some German provinces where subdivision of land is a widespread hereditary custom. In the province of Wuerttemberg, for example, the minimum size of a plot of land to be observed with subdivision is fixed at 0.08 ha. equal to one fifth of an acre. Co-heirs who cannot get land due to this limit are to be compensated in money. There may also be legal provisions (e.g. in Sweden) that consolidated holdings cannot be split up, if the remaining parts do not represent an economic unit.

2 Planning Commission Op Cit. p. 196.

change in cultivation rights. At the end of each year the society's committee should try to make the necessary adjustments according to applications received, taking into consideration the capacity of the applicants. As the adjustment of cultivation rights would be a very difficult and important work, it would be best to leave it in the hands of a special committee.

One observes that in the course of years, there are some changes (often insignificant) in every village in the size of the diffierent owners' holdings. But there are usually greater changes in the size of acreage cultivated by the different landowners and tenants year by year. Also in the alternative case allowance should be made for these natural changes caused by the varying needs of the cultivators. Once in each year the applications of members for alterations in their land use rights would be examined. Some applicants, owing to personal reasons, might want to reduce their cultivation rights, whereas others would be interested in expanding them.

A factor, which should always be taken into account, is the working capacity of the cultivator and his family. It may vary greatly during the lifetime of every agriculturist, according to health, number of the childern and other personal reasons. Nevertheless, working capacity measured simply by the number of childern or grown up children should not be made the decisive factor when deciding upon the extension of land use rights; otherwise experience has indicated that it would encourage still further increase in the birth rate. This was the case, for example, in pre-Bolshevist Russia under the so-called Mir system which provided for periodical land redistribution in accordance with the number of family members or male family members and contributed a lot to the high birth rate of former times in Russia.

The decisive factor in determining the adjustment of land use rights in the alternative case should be the individual ability shown by cultivators in their utilization of land. For an able cultivator there should be possibilities for social ascent, limited only by the competition that is inevitable in an over-populated country. If cultivators become aware that the better their work the greater their chance to get more land for cultivation, they shall have a strong incentive for greater efforts.

In the case of inheritance, all the heirs could still get their legal share of ownership, and they could apply for new cultivation rights. The society would then ascertain whether they had intentions of cultivating their land and whether they were able to cultivate the land. For these heirs entitled to get cultivation rights in most cases new allottments could

only be made by subdividing a full unit in half or quarter lots. No new scheme, faced as it is with a growing agricultural population, can avoid the fact that the holdings will gradually become smaller. All that can be done is to prevent this leading to an excessive fragmentation of land use.

At the present time changes in actual cultivation are often excessive. Such things as the changing size of a family, loss of draught animals, etc., obviously must influence the extent of cultivation. But besides this it is influenced by insecurity of agricultural income, instability of tenure and the social deficiencies of village life. In a country where tenancy is common and where mortgaging of land normally means a transfer of the usufruct to the mortgagee, increasing indebtedness of agriculturists also involves numerous changes in the use of land. The consequence of all these factors is a frequent fluctuation of land from one hand to the other, resulting in a low level of agricultural production. It may be expected that under the suggested regulations, with greater security and stability of land use, changes in usufruct of land will be reduced to a level compatible with better husbandry.

Where co-operative credit societies exist they have, to a considerable extent, replaced money lenders to the benefit of the villagers. The surplus money of richer men can still find its way to the poorer man who needs it, but it goes through the channels of the co-operative society, which acts as a thrift institution for the one and as credit institution for the other. In the same way private bargains in land rights such as tenancy or mortgage agreements could be directed through the channel of a co-operative society for the benefit of both sides. The only difficulty would be to see that farming units were not disrupted by such arrangements. It might not be immediately practicable, but the society should aim at covering all tenancy and mortgage transactions, for which it would act as mediator, pertaining to acreages which represent the new farming units and their subdivisions.

Chapter XII

CO-OPERATIVE ACTION IN FARMING OPERATIONS

THE measures described in the former chapters are designed to create the necessary prerequisites for the adoption of progressive farming methods. It must still be examined how the various farming operations can be promoted by co-operative action.

(a) Farming Operations in New Farming Units

Newly established farming units have to be subdivided into fields of crop rotation. These fields would represent the basic units for farming operations and should be cultivated accordingly. As far as possible this should also apply to the "combined units". The organization of farming procedures in the combined units is, certainly, a relatively difficult task because it would require a relatively high degree of co-operation even from the smallest cultivators, who are usually also more poorly educated. The field arrangement, with separate allotments for every cultivator, would have to allow for occasional suspension of the co-operation required by the combined unit - at least in the initial stages. Farming operations on these combined units should somehow be made to function smoothly. The small cultivators who are to combine together in one farming unit should be selected very carefully. Usually there are very close family ties amongst the villagers and, therefore, it should not be difficult to find two or three small cultivators, related to each other, who can be combined to form one farming unit.

Mutual agreements amongst agriculturists regarding the joint use of bullocks or implements are not unusual. Cultivators possessing only one bullock instead of a pair necessarily must co-operate with each other to complete the yoke. It is undeniable that a cultivator attaches great importance to the possession of a pair of bullocks, or at least one bullock, both for economic reasons and for the social standing that their possession imparts. Where only two farmers are called upon to combine to form one farming unit the easiest way would seem to be to have each of them keep one bullock instead of one of the partners having no bullock, even when it has to do with partners of unequal economic strength. If there are partners without bullocks in the combined units they should find a solution to the problem of compensation etc., according to the local customs. If necessary, the managing committee of the society can take care that the cultivator who keeps a pair of bullocks fulfils his duties according to any rules laid down by the society. Another solution could be that the bullocks

for the combined units are kept not by one of the cultivators but by the co-operative society itself. Later on, with the progress of mechanization, possibly the draught power of the combined unit could be supplied by a tractor belonging to, and hired from, the society.

(b) Mechanized Farming

To many people modern farming implies mechanization. There are, however, numerous examples, especially in European countries, where very intensive and modern forms of agriculture have been developed without a high degree of mechanization. When co-operative farming is advocated, it is often due to the wrong assumption that great progress automatically follows mechanization. But mechanized farming is only a secondary consideration in this connection and it is well realized that in an over-populated country it can be recommended only with reservations. Mechanization is in fact already in progress in India and will continue to extend. The problem is not to stop mechanization, but to direct it on right lines and to avert its possible adverse consequences.

If mechanization in an over-populated country has the effect of releasing agricultural labour, which cannot be absorbed by other branches of the country's economy, it will do more harm than good. But there are different ways and degrees of mechanization. A gradual and partial mechanization could mean that the machine would mainly replace animal draught power and not manpower. The agriculturist is normally willing to work up to his full physical capacity. True, he will want his work facilitated by machinery, but not if it threatens to render his own labour partly redundant. Under conditions prevailing in India mechanization of agriculture should be conducted very carefully.

A combination of cultivators of one village in a co-operative society for improved individual farming would ensure a suitable basis for the right amount of mechanization. If the society purchases a tractor, obviously it should not be used for the full mechanization of a part of the village area, but for partial mechanization of the whole village area. With village farming areas averaging between one thousand and several thousand acres, one tractor would not mean an excessive degree of mechanization.

If the co-operative society owns a tractor, every member would have the right to apply for its use. Its use might be principally transportation and any other purpose not strictly bound to a certain time of the farming season. It is much more difficult to organize seasonal work co-operatively because all applicants want the tractor at the same time. Payment for tractor work should be made to the society at the normal rates for hired machinery.

The tractor should not be considered solely as a machine for field work alone. It can be of great use also as a stationery power supply for every kind of agricultural work, such as threshers, fodder cutters, grinders, wells, etc. If used over a larger area than the calculated working capacity demands - as for instance over the whole area of the village - the desired effect could be achieved that the tractor would mainly replace bullock power and only slightly affect the manpower balance. The co-operative society, in advising cultivators regarding the possibilities of intensification and diversification of agriculture, could stress that a partial mechanization, far from creating unemployment, would instead increase the working capacity of the members and thus promote more intensive branches of agriculture.

Mechanization of peasant holdings of a relatively small size is practicable only on a basis of co-operation. The new field arrangement would permit the co-operative use of a medium-sized tractor, if not with the highest possible efficiency, then with a sufficient efficiency. The opinion is widespread that modern agricultural machinery such as the tractor, can be operated only in large fields. Experience has shown, however, that the area needed for the profitable use of a tractor can be relatively small. German experience indicates that a field between one and two acres is not too small for a small-sized tractor of, say, 15-20 H.P. As long as it is possible for the tractor to move from one field to another nearby without losing any time, it would be nearly as good as using the tractor in large fields. If the cultivators would agree to a common crop rotation the tractor could even be used in one working procedure on all the adjacent fields without observing the boundaries between them. The boundaries would, of course, have to be re-established, once the tractor had done its work.

It would be a mistake to follow the Russian example and take the optimum efficiency of agricultural machinery as the basic requirement. The capabilities of agricultural machinery should not be the determining factor in any farming scheme, but rather the needs and wishes of the agriculturists. In the present circumstances a system which provides for a high level of efficiency in men but low in machines is preferable to one which is efficient in its use of manpoweer albeit efficient in its use of machines.

In the combined units the use of the tractor for the draught work would avoid disputes as to which of the partners should keep the bullocks. Although this would mean starting mechanization with the smallest and possibly the least progressive cultivators, it has the advantage that these are the very ones most in need of the fodder acreage for growing other crops. The field arrangement in the combined units should ensure

that tractor work for the partners of the unit could be carried out without disputes regarding the order of priority.

In some places it may be doubted whether there would be any real gain in replacing bullocks by tractors. The old-fashioned plough commonly used with bullocks has some undeniable advantages; it is a multi-purpose implement and on a certain type of soil, less suited for furrow ploughing, it may do better work than the furrow plough. In most cases, however, the tractor plough will give better yields than the old-fashioned bullock plough, because it ploughs deeper and in a better manner. It may also be mentioned that for special soils a type of tractor plough has been designed which works in a similar manner as the old-fashioned implement. It should not be forgotten moreover that in the climatic conditions prevailing in dry areas it is very important that field operations be carried out at the proper time, without delay, and this is better achieved with a tractor than bullock power.

In the beginning, mechanized farming would have to face difficulties due to the lack of labour trained and skilled in the use of machinery. The seasonal character of agricultural work exaggerates the loss suffered if a tractor is under repair when needed. This is another reason why in the initial stage only partial mechanization is advocated; then, in case of emergency, draught animals would still be available to take the place of a tractor. In this regard, a co-operative society might decide to keep not only a tractor but also a number of bullocks and to combine the use of both. If only some of the members are interested in using a tractor, it could likewise be organized by the society. For instance, members belonging to one section of the village area could form a group for the common purchase and use of a tractor.

Another point that is relevant is whether the supply of farmyard manure will be ample if the number of bullocks is reduced by mechanization. There should be no drastic shortage as long as the use of a tractor means only a reduction in the excess number of bullocks and so long as a pair of them is retained for each farming unit. In a combined unit, the cultivator who keeps the bullocks should share the manure equally for the whole unit. But if, through mechanization, the bullocks for a certain number of holdings were to be removed entirely, it would become necessary to have a substitute for farmyard manure. Green manure could, to a certain extent, be a substitute although presumably not a perfect one. The cultivation of leguminous and other suitable crops would, therefore, have to be promoted where the supply of farmyard manure is reduced by mechanization.

Another way to avoid a decline of soil fertility under mechanization is to promote dairy husbandry. To replace bullocks by buffaloes or cows would not, it is true, achieve any gain of acreage for food in place of fodder growing. It would, however, mean that fodder grown would be converted not to draught power, but to dairy products, and would thus raise the nutritional level of the rural population and increase the supply of dairy products to urban markets.

(c) Abolition of Excess Draught Animals

One of the main drawbacks in all countries where uneconomic units are the prevailing feature in agriculture, is an unbalanced relationship between acreage and livestock kept thereon. Usually there is an excess of livestock on small holdings; thus, the productivity of the animals is low due to insufficient size of the fodder area. The same applies to India; indeed, it has the added disadvantages in that cows, with the exception of in a few districts, are not used for draught purposes.

For progressive farming it is necessary, therefore, that excess draught power should be gradually eliminated. This can only be achieved by systematic co-operative action which, in the course of time, should bring down the number of bullocks to one pair per farming unit. The suggested establishment of farming units is also meant for this particular purpose. A cultivator with an usufruct extending over one unit or more will not ordinarily want to keep more bullocks than necessary. But small cultivators, combined together in one farming unit, should be advised not to keep more than one pair of bullocks per unit even though they may wish to do so despite all economic arguments.

If the number of bullocks is reduced to one pair per unit, the acreage formerly needed to produce fodder for the excess draught power will be freed for other purposes. This is really the cheapest way to gain new land for growing more food and it is cheaper than land reclamation, though the latter must also be promoted by all means. The extent of these possible gains in land for food - growing purposes will vary from village to village. But on the whole it would, certainly, be substantial.

With regard to those districts where the use of cows for draught purposes is known or could at least be considered, it should be mentioned that this practice facilitates the combination of mechanical and animal draught power. As distinct from bullocks or horses, cows can be fully utilized, if for draught purposes they are partly replaced by a tractor and are at hand if the tractor occasionally goes out of order.

(d) Common Crop Rotation

In many cases one observes that certain parts of a village area are cultivated with the same crop although the fields belong to numerous cultivators. Obviously many cultivators themselves somehow have the feeling that it is advantageous for them to follow certain rules with regard to the crop rotation in their different fields. It will be possible to make better use of such advantages, if farming units are established and the cultivators consult the society on all questions of cultivation and crop rotation. If the cultivators in a "section" of the village area could agree to cultivate contiguous fields with the same crop, and to follow a common crop rotation, larger blocks would be growing the same crop. A common crop rotation and a unification of the cropping scheme in whole sections of the village area, would not only facilitate the use of machinery, but would also economize water in irrigated areas, as well as simplify pest control and watch and ward. It may be that cultivators would have no great objections to such an arrangement the more so as usually there are no great differences in the cropping schemes of cultivators of the same village. If the layout of fields could follow the lines described above as an alternative solution, the possibilities to make use of the advantages of a common crop rotation, certainly, would be greatly enlarged.[1] This is another reason why this alternative solution, in suitable cases, should be taken into consideration.

A common crop rotation does not require an inflexible or an entirely uniform cropping scheme. The needs of cultivators may be quite different, one being interested in animal husbandry, another in raising cash crops, and a third, with a bigger family, in food crops. The common crop rotation need not be irredeemably upset, if, for instance, only one of the fields is cultivated in a different way. In such a case, it would be necessary only to make sure that uniformity is re-established in the next season.

The possibilities of adopting a common crop rotation, i.e., the cultivation of crops in large coherent blocks, are restricted by the natural irregularities of village areas, as boundaries, roads, water courses, contours etc. In so far as these possibilities are at hand they should be used. But common crop rotation is not an essential feature of the recommended co-operation in farming operations. It serves, however, to show that the advantages of large-scale operations (usually exaggerated) can be attained to some extent also under conditions of individual farming, if it is properly organised.

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1 See Map 2.

(e) Water Supply and Economy

In dry areas the supply of water by mechanical means is, perhaps, a more important side of mechanization than the use of a tractor. Sinking of tubewells to supplement insufficient canal water or to get new areas irrigated is in many cases the most urgent and effective measure for progressive farming, the more so as some other measures, as for instance the use of fertilizers, largely depend upon sufficient water supply. Individual measures will benefit mainly the big landowner whose area under cultivation is large enough for the working capacity of a tubewell. To bring the benefits of mechanical water supply to small cultivators co-operative action is needed. In many cases it would even be advantageous to mechanise the old-fashioned persian wheels driven by animals or to replace them by mechanical outfits as the current expenses for the engine are normally lower than the costs of fodder for the draught animals and the water supply is much more efficient. The abolition of excess draught animals can considerably be promoted by installing tubewells.

If a tubewell is to be used by small cultivators they must be organised in a group and the area to be irrigated must be suited for the purpose. The consolidation of land combined with the establishment of appropriate farming units is necessary to ensure an economic use of the water, made available by installing a co-operative tubewell.

Economy of water could be achieved if the cultivators would agree to a common cropping scheme, so that in the different sections of the village area contiguous plots would be planted with the same crop. Less water would be needed for the irrigation of such a block than for the irrigation of scattered fields.

Consideration has also been given to a proposal that the State should establish tubewells for the use of small cultivators, and operate them as a State enterprise with a fixed water rate. This is practised, for instance, in some districts of U.P. It may be assumed, however, that in the long run it will serve the interests of the cultivators better, if the tubewell is established and operated co-operatively.

For the most part, several cultivators are obliged to rely upon a common water supply. This has paved the way for a certain kind of co-operation which is an old tradition in the country. For instance, cultivators possessing a common persian wheel have their mutual agreements regarding the ownership rights and the terms and order for the use of the wheel and the water. This shows that co-operation is not impossible if necessity demands it and if the benefits are evident to the participants.

Usually the cultivators themselves are very anxious to get more water and to improve in this way their agricultural production. This may justify the expectation that they will actually use the possibilities opened to them and will pay for the water supplied so that the society may repay the loans contracted for this purpose.

(f) Other Measures

Other measures, which can be promoted by co-operative action, are the use of fertilizers, improved seeds and improved implements. The introduction of these means of production will be much easier if they are available from a co-operative store and are offered to the cultivators on credit basis than if they have to purchase them individually in distant localities.

It is evident that measures of plant protection cannot only be promoted by co-operative action but in many cases are useless without the co-operation of the cultivators throughout a given area. This is true in all cases of dealing with pests or disease spreading from one field to the next.

Conclusion

Examining the different items of farm management, one comes to the conclusion that small cultivators in most of their farming operations can gain a lot by co-operative action, without going to the length of *pooling* the land, and that these advantages can be attained only by acting together in a co-operative society which is guided in the right way.

Chapter XIII

CO-OPERATIVE EDUCATION AND GUIDANCE

IT is not sufficient merely to have the development plan worked out and the financial means provided for the necessary investments. Beyond these desiderata there is the necessity to get the plan executed in the right way and to have progressive farming actually carried out. This is the main organisational and educational task of the new societies. The experience of the better farming societies has shown that without initiative and guidance from the side of the society, rules for progressive farming, laid down in bylaws, mostly have little practical value. Educational work, therefore, should begin when the development plan is worked out in consultation with the cultivators themselves.

It is essential to have the cultivators understand that the plan is their own, their own investment, sheir own responsibility and their own risk; that the exact calculations for expenses and recovery of loans are not aimed at getting outside funds profitably used but are for the purpose of directing their own funds in the right way and of protecting them against possible losses; that, for instance, the water rate, calculated for the co-operative tubewell, is not an additional tax but the exact cost of their own irrigation calculated in the same way as the big landowner calculates what he actually has to pay for one hour irrigation with his own tubewell. In the beginning the cultivators may not understand in sufficient detail what is the aim in view, and so some educational effort will be needed to get them thinking in new terms.

When the new cropping scheme and the new agronomic measures are accepted by the cultivators, it does not mean that automatically they will act accordingly. The village area for which the plan is made is not one big farm but consists of a large number of small farms. The plan must be subdivided accordingly and a relevant portion brought down to each one of the cultivators [1]. For this to be done successfully it is essential that the cultivators are willing to act in accordance with the plan and to start progressive farming. But this alone will not do, if they are not organised and guided in the right way. The combination of individual initiative and co-operative guidance is the ideal aim.

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1 The plan for the sample village, for instance, provides that in 200 acres irrigated by a new tubewell 3 acres shall be cultivated with tobacco. The manager of the society will have to find out the cultivators who are interested in tobacco growing and arrange that they are supplied with the respective amount of seeds and fertilizers.

The cultivators - if not all, at least a part of them - will need some guidance in their farming operations, especially if new crops or new farming methods are to be introduced. It is a question whether it will be possible to find local leaders qualified to exercise co-operative initiative and guidance. Of course, it will not, in all cases, be possible to judge the qualification of local leaders beforehand. But in villages where, from the beginning, there is little hope to solve this problem, it will not be advisable to establish a co-operative society for improved individual farming.

Perhaps it would not be the ability of the cultivators and their willingness to co-operate which will represent the greatest difficulty in the way of co-operative farming, but the finding of an active, capable and impartial local leadership. To raise the educational level of several hundred local leaders would, therefore, be a task of first priority. If the education of local leaders seems to be difficult, it is at least easier and quicker to perform tnan the training of masses of cultivators which is, of course, also urgently needed for the promotion of co-operative farming and should be promoted as far as possible.

Local leaders cannot be expected to have all the technical knowledge required for the organisation and guidance of progressive farming. But as the societies are to be organised in the framework of a whole scheme each of them will get help, in the elaboration of the development plan and in other difficult technical matters, from experts of a higher level. The functions of the local leader would require of him in the first instance, organisational ability and also a certain degree of technical knowledge. It will be very necessary to have the right men in the leading committee of the society to conduct and carry on the new undertaking, men willing to take technical advice from outside and able to win over the members for the progressive methods advised.

It is quite important in this connection that in the community development and national extension programme arrangements are made for the training of personnel of all categories. At present there are 43 training centres for extension workers with an annual out-turn of about 5,000 persons. It is planned to augment this number during the Second Five Year Plan to 71 extension training centres and 95 basic agricultural schools/wings attached to training centres and agricultural colleges throughout the country for imparting extension and basic training to village level workers [1]. Their training is meant for all-round work in rural uplift. But it seems to be advisable that in villages where a new type of progressive farming has to be carried out, besides this all-round work, somebody is charged

1 Planning Commission, op. cit, page 87.

especially and exclusively with this novel task. Only in this way will it be possible to raise in course of time experienced farming specialists in the village. It could be considered to have special training courses arranged of one or two months' duration for selected persons of villages where new societies were to be established, to give them theoretical and practical training in the special organizational and farm management questions involved in the establishment of new societies.

Another question is whether it will be possible to find local leaders who can carry out their functions with the necessary degree of integrity and unselfishness. The difficulties, which may be encountered in this respect, should not be underestimated. But the difficulties may be mitigated by the fact, that from the beginning the new societies as a part of a scheme would be taken under control and provided guidance from a higher level by district and provincial authorities. Furthermore, every effort should be made to have the internal structure and the financial operations of the societies organised in such a way that the opportunities for dishonest manoeuvres are restricted as far as possible. Without honest men in the leading positions no co-operative action is possible. As Co-operation has already made some headway in the country there seems to be no reason why it should not succeed in this new field of action in which there is no more scope for dishonesty than in other co-operative activities.

CHAPTER XIV

THE NEW TYPE OF CO-OPERATIVE SOCIETY

AS the new co-operative society will be charged with all managerial functions which cannot be carried out within the boundaries of the single small holding, and as it has to exercise initiative and guidance for the improvement of farming techniques of its members, it has quite a wide and difficult task to perform. It is advisable, therefore, to have the activities of such a society concentrated on the task of improved farming—including marketing and the supply of farming requisites and credit activities for productive purposes.

In principle, there are only a few elements in these recommendations which have not yet been tested in some form or other in India; land consolidation, for instance, has been carried out in a great number of villages with success, and the modified form of consolidation now suggested would be based on the same principles; co-operative marketing and supply is also already introduced here and there; co-operative capital investment has been carried out, for instance, in some tubewell societies in U.P. etc. The main new feature is the combination of all these elements in a scheme of systematic and concentrated co-operative effort. It is not so much a question that one or other of the recommended measures will work, because each has already been proved practicable. Rather the success will depend upon the readiness of the cultivators and the authorities to make the effort called for in a comprehensive scheme.

Nevertheless there are some essential features of *individual farming on co-operative lines* which are relatively new in the field of Co-operation; as for instance co-operative guidance with regard to the establishment and maintenance of farming units, co-operative planning, and the special method of co-operative financing. This and the new combination of different elements make it necessary to have a distinctive type of co-operative society established specially for the purpose in view.

The recommended model bylaws[1] of the new type reflect this situation. There are many provisions which are taken almost verbatim from existing societies and only a few which are new. Under "objects", for instance, it is provided that the society, if necessary, should arrange for land consolidation in such a way that farming units of a proper size and shape can be formed, and also that it should maintain established or existing farming

1 See Appendix 4.

units (the term "existing farming units" refers to already consolidated villages included in the scheme). There is also a provision that the society may take land on lease from members and make suitable arrangements for its cultivation. This provision is meant for cases where members, especially if they are absentee-owners, are willing to surrender their cultivation rights to the society. Later on when a greater number of villages are included in the scheme this recommendation may gain a growing importance.

As one of the "objects" it is also provided that the society should guide and supervise the transfer of cultivation rights of the members in order to maintain the farming units and to secure the application of progressive farming methods. Under "binding agreement" [bylaw 5] it is explained that every member shall agree to consult the Managing Committee in case he wants to make any change in tenancy arrangements on his land or in rights of cultivation. The Managing Committee [bylaw 31 (16)] will advise the members in this respect.

The development plan is another item dealt with in the bye-laws [bylaw 2(a) and (b)]. The Managing Committee must prepare periodically, in consultation with the Agriculture Department, a farming plan for the approval of the General Meeting and take action to see that members comply with it [bylaw 31(13)].

The bylaws restrict the credit activities of the new societies to productive purposes only as one of the objects is to arrange and contract through appropriate institutions investment loans required for the progress of farming techniques [bylaw (2b)]. It has been mentioned that later on when the societies have built up their own capital they may take up credit activities for other purposes.

These are, in short, the main provisions in which the new type of society is distinguished from existing types. All other provisions of the model bylaws are more or less identical with the standard provisions of other societies.

In villages where the reorganisation of land use rights has to be carried out in the manner described in Chapter Xb, the bylaws should be supplemented by a provision that one of the objects of the society is "to secure from the owners, lease holders, occupancy tenants the rights of cultivation on the land situated within the area of operation of the society, and to allocate these rights to members in suitable farming units".

The new type of society is a multipurpose one. As distinct from other multipurpose societies credit activities are of only minor importance

and are restricted to productive purposes. Marketing and supply activities are an essential part as in other multipurpose societies but are supplemented by systematic activities in the farming field. As is the rule for multipurpose societies, the liability is limited. The bylaws provide for a limited liability of four times the value of the share which is fixed at Rs. 10. A member is required to hold one share for every 5 acres of land or part thereof owned by him, and landless tenants can be admitted to membership if they purchase one share each.

Experience has shown that units for farming operations should not be too large. In villages, with several hundred agriculturists or an area of several thousand acres, it would be advisable to have two or more societies. The optimum size for this type of co-operative may vary with local conditions and can be determined by practical experience. In normal cases, the maximum size can probably be determined with 100-150 members or alternatively, with 1,000-1,500 acres of land.

In India many rural co-operative societies are charged with tasks outside the economic sphere, as, for instance, administrative, communal and social tasks (e. g. better living societies). Partly this may be attributed to the fact that in many cases an effective communal body is lacking. Since the development of panchayats is an important target in the planning programme the functions of panchayats within the village community will grow in the near future. This would enable the Co-operative Movement of the country to return to exclusive activity in its original field, namely economy. If so, the new societies would cover nearly all activities of a multipurpose society with the exception, perhaps, of credit activities for unproductive purposes. But even these, as mentioned before, could be taken up when the societies have built up their own capital.

Agricultural progress can be the aim of societies with differing names, as "Society for improved farming", "Better farming society", or "Co-operative farming society". Irrespective of the name, however, and of provisions in bylaws, a society will not achieve quick progress in farming techniques, if special and systematic efforts are not made in this direction and if funds are not made available for the necessary investments. Without these pre-conditions the bylaws of a society to promote agricultural production and farming techniques of its members will have a more or less nominal character. It is recommended, therefore, that the establishment of new societies for improved farming be limited to such number as the availability of funds and capable leadership indicates. In fragmented areas another limiting factor will be the availability of technical personnel to carry out land consolidation in the usual way or the establishment of farming units in the suggested modified way.

This answers the question whether it would not be advisable to use available funds for existing better farming societies instead of establishing new societies. It has previously been pointed out that it is not a question of using available funds as subsidies for co-operative societies but of mobilising, with the help of credit, the resources of small cultivators joined together in a co-operative society. There is, of course, no reason why the recommended measures should not be introduced in a village where a better farming society is already in existence. But the same steps as in other villages will have to be taken in this village as well.

The better farming society, which usually consists only of a restricted number of members, should try to get all the villagers or at least the majority of them as members. Land consolidation with the establishment of farming units, elaboration of a development plan etc., should follow as in the other villages. In short, the better farming society would have to be transformed into a society *for improved individual farming*, adopting the new bylaws and acting accordingly. In a village where a better farming society exists there may be a group of agriculturists who are progressive-minded and this would facilitate the introduction of the scheme. But generally speaking the existence of a better farming society in a village would not be a sufficient criterion that it is suited for the scheme.

CHAPTER XV

THE ROLE OF CO-OPERATION FOR PROGRESS IN AGRICULTURE

IN the preceding chapters detailed recommendations have been made as how to improve agricultural production of small cultivators under the conditions of individual farming. It must be emphasized, however, that the whole work should not be looked upon as an inflexible scheme. It has always to be adapted to local conditions. These recommendations have been worked out in detail to serve as an example and as a basis for the start of the work. Practical experience will show what alterations will be needed in one case or the other. In the process of the work the practical sense of the agriculturists themselves will, certainly, contribute a lot to find the right solutions for the suggested new ways of co-operation in the farming operations.

Although practical experience, certainly, will result in some alterations in detail it may be expected that the basic principles of the recommended scheme will assert themselves in future. These basic principles are:

(1) The planning of agricultural development on the village level.

(2) The financing of the necessary investments for agricultural progress by credits to societies to be repaid out of additional production.

(3) The establishment of farming units which are to be operated and maintained in accordance with the requirements of progressive farming.

(4) Advice and guidance in farming operations of small cultivators.

(5) The establishment of a special society for the purposes mentioned above.

It would be a wrong interpretation to look upon *Individual Farming on Co-operative Lines* as a transitory stage determined to prepare the grounds for *collective farming* as the final aim. Is collective farming actually the desirable aim? The approach to the Second Five Year Plan as explained by the Planning Commission has made it clear that each country should develop according to its own genius and traditions and that in India the socialist pattern of society is not to be regarded as some fixed and rigid pattern. It is not rooted in any doctrine or dogma.[1] Certainly

1 Planning Commission, op.cit. page 10.

not a specific pattern should be the aim in view but the improvement of the living conditions of the tillers of the soil in accordance with their own interests and their mental attitude. It may well be that in the long run personal attachment to the soil will prove the best suited and most efficient way of using the land.

There is no scheme or formula which, if adopted, would automatically lead to progress in agriculture. Progress can only be achieved if systematic guidance and financial help from above can be combined with the efforts of progressive and co-operative - minded agriculturists and their local leaders. The extent to which such guidance and financial help can be secured and the efforts of education given material expression will determine the degree of progress. Measures attempted beyond these limits will remain more or less nominal. This means that progress can only be achieved gradually and step by step. It makes no sense to establish new societies for purposes for which there has been no preparation. Progress cannot be secured by provisions of bylaws but only by actual work after the necessary pre-conditions have been created. One of these pre-conditions is the consolidation of fragmented land combined with the establishment of farming units. But this measure alone is not sufficient. It must be supplemented by co-operative planning, co-operative financing, co-operative action, education and guidance. Only by concentrated efforts at all levels, the rank and file cultivators, the local leaders and the authorities concerned in the tehsils, districts and provinces, can the progress in view be achieved.

The progress in farming techniques achieved in some of the community projects in India demonstrates that the small cultivator, if properly advised and systematically assisted, is well in the position to increase the production of his land. It is reported that the participation of the people in the planning and execution of schemes has been a specially promising feature of the programme. The readiness of the people to respond is seen from the fact that they have essentially contributed to the expenditure for the execution of the various activities under the community projects [1]. It is now the problem to secure further progress on a permanent basis and with the help of the resources which India's agriculture possesses. The co-operative principle, if adopted in the right way and *without collectivistic exaggerations*, seems to offer a solution for this very essential problem.

It seems that we are now at the beginning of a new phase of development characterised by the gradual infiltration of co-operative methods in the sphere of agricultural production itself. If the possibilities which are

1 Planning Commission, op. cit. page 85.

to be found in this direction are properly and carefully exploited, we may expect another remarkable contribution from Co-operation to the progress of agriculture.

The development of Co-operation as envisaged by the Planning Commission visualizes a gradual transition to co-operative village management. It is advocated that the community should accept a measure of responsibility for providing opportunities for gainful work in agricultural as well as non-agricultural activities to all persons in the village who are in need of work. It is emphasized that co-operative village management implies, in the first place, that the ownership of the land belongs to peasants. It is outlined that during the transition to village co-operative management there will be individual farmers cultivating their own holdings, groups of farmers who pool their lands voluntarily into co-operative working units and some land belonging to the village community as a whole. "The aim would be to enlarge the co-operative sector until the management of the entire land in the village becomes the co-operative responsibility of the community"[2] .

In the preceding chapters it has been tried to describe that the aim in view can possibly also be achieved without endeavouring the *pooling* of land of small landowners, a measure which may adversely affect the productivity of rural economy and the foundations of rural society. For the sake of clearness the description is confined to the agricultural side of the problem without overlooking the fact that for the development of the rural community the non-agricultural activities will play a role of growing importance.

The point at issue is to find the right socio-organisational principle for districts with rural over-population, with a majority of small holdings of uneconomic size, in order to raise the rural standard of living. The *individualistic* principle, quite efficient under other circumstances, is not a solution under the conditions of India's agriculture; neither does the *collectivistic* principle seem to be suitable. The co-operative principle, combined with the incentives of individual land use and private ownership of land, may offer the right solution.

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2 Planning Commission, op. cit. page 69,

APPENDICES

APPENDIX 1

HOW TO ELABORATE A VILLAGE AGRICULTURAL DEVELOPMENT PLAN*

BEFORE the establishment of a co-operative society for improved individual farming in the selected pilot villages, a clear plan for the improvement of farming techniques and for the increase of agricultural production has to be worked out. For this purpose the following data is needed:

A. Investigations

(1) Acreage of the village area:

(a) Total

(b) Cultivated

(c) Uncultivated and cultivable

(d) Uncultivated but not cultivable

(2) Cultivation:

(a) What acreage under cultivation for the various crops in the last kharif season?

(b) The same in the last rabi season.

(3) Crop rotation:

What crop rotation is used by most of the cultivators? Are there great deviations in the crop rotations of the different cultivators?

(4) Average yields:

Average yields for the main crops (wheat, cotton, sugarcane, etc.,) md/acre, in irrigated and (or) unirrigated fields.

(5) Use of improved seeds:

What percentage of the total acreage under the main crops is sown with improved seeds (rest desi seeds)?

(6) Use of fertilizers:

How many cultivators were using fertilizers in the last two seasons? What kind of fertilizers? To what crops? What amount per acre for each crop? Total amount in the village area approximately?

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* These are only provisional proposals which may be supplemented in the course of time by suggestions of local experts.

(7) Use of improved implements:

How many improved ploughs are used in the village? How many drills are used? What approximate percentage of the area under grain is sown broadcast and what by drills?

(8) Use of tractors:

Is a tractor used in the village area? Permanently kept in the village or hired from outside? One or more owners? Used only by them or also hired out to other cultivators in the village?

(9) Irrigation:

(a) Acreage under canal irrigation:

(b) Acreage under well irrigation:

(c) Acreage rainfed:

Water supply sufficient in canal irrigated area? In well irrigated area? How many persian wells? Total number of cultivators participating in the different wells? Are there tube-wells in the village? Acreage irrigated by them? How many owners?

(10) Farming Units:

Number of farming units by investigating who actually cultivates the different plots of land in the village area. Average size of farming units in the cultivated area. How many units over 20 acres, 15 to 20 acres, 10 to 15 acres, and less than 10 acres?

(11) Fragmentation of land:

Land consolidation carried out or not? What year? Fragmentation high, medium or low? Average number of fields per owner:

(12) Draught animals:

How many bullocks in the village? How many camels? How many cultivators with only one bullock?

(13) Animal husbandry:

How many cows, she-buffaloes, sheep, goats and poultry in the village in approximate figures?

(14) Land revenue and water rates:

What are the rates for the main crops?
Total amount of land revenue paid last year:

B. Planning

As soon as the listed data are collected the planning work can begin. For this purpose a close collaboration of the local officials of co-operative and agricultural departments will be required. The plan should be based on the assumption that all cultivators of the village will join the society and should include therefore the whole village area. The cultivators themselves should frequently be consulted when elaborating the plan to find out what progressive measures they suggest and would like to introduce. When the co-operative society is established, the plan should be suggested to the members for acceptance. If all cultivators in the village will not join the society or all of the members are not prepared to introduce one or other of the suggested measures in their holdings the plan has to be altered correspondingly. But once the plan is accepted, the participating members would be obliged to stick to it.

The plan should be based on the following considerations for the different items:

(1) Acreage:

Are there any possibilities for land reclamation in the village area? By what means? What expenditure? (Reclamation work which is part of big projects should not be included in the plan). If the cultivated acreage is decreasing by water logging or insaltination, what measures can be adopted to stop it?

(2) Cultivation:

Is the cropping scheme of the village according to scientific knowledge satisfactory? How can it be improved? Are there any new crops which would be recommended to the cultivators for introduction? Suggested acreage under cultivation for the different crops in an improved cropping scheme.

(3) Crop rotation:

Regardless of possible changes in the cropping scheme it should be considered whether in the rotation of crops some changes would be advisable.

(4) Average yields:

What scope is there for an increase of yields of main crops? With the given water supply and with additional water?

(5) Use of improved seeds:

What additional acreage could be sown with improved seeds

under wheat, cotton, sugarcane etc.? Total amount of improved seeds needed? Total cost?

(6) Use of fertilizers:

For what additional acreage could the use of fertilizers for various crops be recommended? What kind of fertilizers? What amount per acre for wheat, cotton, sugarcane etc.? Total amount needed for the forthcoming two seasons? Total costs? What measures can be recommended to improve the use and care of farmyard manure?

(7) Use of improved implements:

If it has been proved that modern ploughs are doing better work than the old fashioned plough, how many new ploughs would be needed in the village to supplement the equipment? How many drills would be needed to have the whole acreage under grain sown by drills? Single row drills, or could the purchase of a drilling machine for co-operative use be recommended? Total costs? What other implements such as sickles, hoes, etc. need improvement?

(8) Use of tractors:

Can the use of a tractor be recommended for certain farming operations? Perhaps, for one deep ploughing and subsequent cultivation with bullock ploughs? Would the tractor be used more effectively with the furrow plough or with other equipment? Does fragmentation of land allow the use of a tractor? Can the tractor be used for other work also, as levelling of land, as stationary power supply for mechanical equipment etc.? Could the society get the tractor for seasonal work hired from outside or can purchase of a tractor be recommended? What are the costs? Can the question of skilled driver, of repair and spare part service be solved?

(9) Irrigation:

Have the subsoil water conditions been investigated in the village area? In what depth is sweet water available? Is the sinking of a tubewell preferable or the instalment of a corresponding number of new persian wells? Is it advisable to mechanize existing persian wells to augment the discharge of water and to lower the driving expenses? Is the sinking of a tubewell advisable? To supplement insufficient canal water or to get barani land irrigated? What size of tubewell? One or more? What are the costs for installation? What changes in the cropping scheme would evolve, if more water is available? What other progressive measures would be made possible?

(10) & (11) Farming units and fragmentation:

Are the cultivators prepared to get the land redistributed in new farming units? How many small cultivators would have to be combined in one farming unit? Is the redistribution of land a pre-requisite for economic use of tubewell water?

(To fix the details and to execute the provisions of this part of the development plan will be the work of specially trained staff).

(12) Draught animals:

How many bullocks could be abolished in the village, if all of them be used for the normal acreage of land corresponding to their capacity? How many bullocks could be abolished, if persian wells would be mechanized or replaced by the tubewells? What acreage could be gained this way for food growing?

What additional gains are possible through mechanized farming? What changes in the cropping scheme are possible by reducing the number of draught animals? Can more green manure plants be grown?

(13) Animal husbandry:

What recommendations can be made for the development of animal husbandry especially milch animals and poultry? If the number of draught animals were reduced, would it be advisable to replace them by milch animals?

(14) Godown facilities:

What storage and godown facilities are needed to undertake supply of seeds, fertilizers etc. and marketing of surplus produce? What dimensions of the building? What materials? Approximate costs? Is other equipment needed for co-operative use, as for instance cane crushers, flour mills etc.?

APPENDIX 2

AGRICULTURAL DEVELOPMENT PLAN FOR SAMPLE VILLAGE 'A'

(1) **LOCATION** (local data)

(2) **Socio-economic structure**
(See Appendix 6)

(3) **Fragmentation**

The village farming area is highly fragmented and, therefore, one of the prerequisites for progressive farming is land consolidation combined with the forming of adequate farming units. The villagers have expressed their desire for consolidation and made a written application for it. Priority will be given to this village so that consolidation could be started immediately when the other preparatory work for introduction of the scheme is completed. In Appendix 6 recommendations are made as to combining consolidation of ownership with the establishment of farming units.

(4) **Water Supply**

Sixty-one acres are irrigated by 7 persian wheels. The remainder of the area farmed is rainfed. Inadequate water supply is the greatest obstacle to progressive farming. Subsoil-water conditions seem to be suitable for sinking tubewells as a tubewell is operating successfully at two miles distance. The well-boring specialist will have to be consulted first. It will have to be taken into consideration whether the sinking of a tubewell would affect the existing wells feeding the persian wheels. To have the greatest part of the village area irrigated would require two tubewells. But to save expense it has been suggested to the villagers to have a start made with only one and to install the other when the resources of the society are developed. It should be taken care, however, that this will not adversely influence the land consolidation measures because each landowner of the village wants to have a plot in the area which will be irrigated first. The villagers want the tubewell sunk at the eastern side of the village on higher level. From here with a 10 inch tubewell of 1½ cusec discharge 200 acres could be irrigated.

(5) **Cropping Scheme**

The present cropping scheme for the unirrigated area is shown in the Table on page 70a. It is much more diversified and intensive in the area

irrigated by the persian wheels. There is little scope for improvement of the cropping scheme in the unirrigated area. But on the 200 acres which it is planned to irrigate by tubewell, the cropping scheme can be changed and greatly improved. This has been discussed with the villagers and they have made some useful suggestions but because their technical knowledge is limited it is impossible to base the new cropping plan entirely on their suggestions. The Table on page 70a shows the new cropping scheme worked out with the advice of the local official of the Department of Agriculture and another official of the head office of the same Department. The villagers have expressed their willingness to adopt the new cropping scheme.

It is still to be calculated whether the water supplied by the proposed tubewell will suffice for the extensive cultivation planned. The irrigation plan shown on page 70 has been worked out with the help of an experienced expert of the Department of Agriculture. It gives figures for water needed by various crops for each month of the year. The tubewell would have to work 8 hours a day nearly the whole year throughout with a peak demand in March and September requiring 9½ hours work a day. The tubewell is fairly well utilized but not overcharged. The planned degree of intensification with a land utilization of 110 per cent is still moderate. But it seems to be advisable not to expect too much at the initial stage. Later on the cropping scheme may further be improved. There is still a sufficient margin left for a more intensive utilization of the tubewell which can work for even 10 - 12 hours a day.

(6) Improved Seeds and Fertilizers

Improved seeds are called for in the plan for the main crops particularly those which are to be extended or newly introduced in the irrigated area (see page 70a). For crops covering a large area as wheat and cotton it would not be necessary to procure seed for the whole acreage, if the cultivators can agree among themselves that some of them will grow seed (as far as possible in adjacent fields) and hand over when harvested to the society in exchange for common seed at the usual discount rate. In this way improved seed could be made available in the next season for the whole acreage. To introduce it gradually means that the amounts required cannot be very exactly reckoned and it would be advisable to have a lump sum assigned to the society under the Development Plan on its account with the Bank as credit limit for the purchase of improved seeds. Another reason for this kind of arrangement would be that the seed requirements in the following seasons during the five years' period are not equal in amount.

The progress here planned should not be confined to the irrigated area. For example, improved seeds would also be required in the rainfed

area and on the land irrigated by the persian wheels. If the total requirements of improved seed for the tubewell irrigated area is taken as the basis of calculation and if the introduction of the seed is effected gradually as suggested the amount calculated on page 70a should suffice to meet the needs of the whole village. As it is difficult to calculate even approximately the probable increase of production in the unirrigated area the calculation shown in the Table relates only to the 200 acres to be irrigated by the tubewell.

The fertilizer requirements can be calculated fairly exactly (see page 70a) but not all the farmers may follow the advice regarding the use of fertilizers and the amounts per acre recommended. Therefore, it would be appropriate to provide also for this item of the Development Plan a lump sum corresponding to the optimum requirements.

(7) Improved Implements

The villagers have said they want at least two forrow ploughs, two hoes and two drills supplied through the society and with these as patterns the village carpenter could construct others. The price for this set of implements would not exceed Rs. 300. It would be well, however, to have a larger sum, say, Rs. 2,000, at the disposal of the society as a credit limit for purchase of improved implements.

The villagers also want a tractor. As it is doubtful whether the village alone could fully utilize the working capacity of a tractor (at least 1,000 hours per year) it seems advisable to postpone this innovation until more than one village within reach is included in the scheme. It could then be considered whether one tractor with centralised services could be acquired by the Bank for use in the villages attached to the Bank and that mainly for special work e.g. levelling, deep ploughing, etc. The work of the tractor would be combined with the use of bullock power.

As there is some overstocking of draught animals in the village, especially in small holdings, it would be an advantage if periodically the tractor could be used and so dispense with the excess animals.

(8) Working Capital

The society will need capital for its current expenses and this will have to be provided by the Bank in cash on loan repayable at the end of the season in the same way as other short-term credit. The expenses for an engine-driven tubewell (the cost of fuel, oil and service) can be calculated as 12 annas per hour. As the tubewell should work approximately 1,400 hours in one season Rs. 1,050 would, therefore, be needed.

(9) Godowns

Store facilities or godown facilities will be essential for the working of the society to facilitate the supply of seeds and fertilizers and the marketing of surplus produce. Marketing should from the beginning be arranged through the society because it is the best way to secure the recovery of the funds from the members. It is recommended that all cash expenses for this purpose should be provided as grants from the Fund because these are investments which are not directly attributable to individual members. The members should contribute to the construction of godowns with human labour and with carting work free of charge. It would be well to have an agreement made that each member is obliged to give a certain amount of labour or carting work for stated purposes and members who have no work to do for the construction of stores should do some other work as for example digging manure pits, improvement of village roads, etc. The actual expense of constructing a store 14 x 16 ft. "pacca" is stated to be between Rs. 2,000 and Rs. 3,000. Therefore, Rs. 3,000 should be put at the disposal of the society as an outright grant.

(10) Financial Calculations

	Rs.
(a) Long-term investments:	
Tubewell of 10 inches $1\frac{1}{2}$ cusec discharge inclusive of installation.	22,000
Godown (on subsidy basis).	3,000
(b) Medium-term loans (to be recovered in two years):	
For purchase of improved implements (credit limit)	2,000
For purchase of draught animals (credit limit).	3,000
(c) Short-term loans (to be recovered on the end of each season):	
For improved seeds (credit limit).	1,000
For fertilizers (credit limit).	1,000
For current expenses of the tubewell etc. (credit limit).	2,000
For current expenses for the hire of a tractor not owned by the Society.	1,500
Total amount to be credited to the society.	35,500

Members would have to pay a fixed water rate for water from the tubewell. It will probably be easier to secure payment of the water rate by deliveries in kind than in cash money. In any case, the members will be obliged under the bylaws to sell the surplus produce through the society and when it has been marketed by the society the water rate and other debts can be deducted before payments to the members. Members who

fail to pay the water rates due from them will not be supplied with tubewell water in the next season.

Should the credit given to the society for medium-term loans (purchase of improved implements and draught animals) be used to the full limit of Rs. 5,000 it would mean that the society would have to pay back Rs. 1,250 at the end of each season to repay it completely in four half-yearly instalments. The amounts repaid, however, would be available for new medium term loans in the next season. The loans have to be recovered from the members who received the implements and the draught animals preserving the proprietory right with the society until paid off. It is unlikely that this credit will be used to the limit.

For short-term loans the full amount of Rs. 4,000 for seeds, fertilizers and current expenses will probably be used in the first season, whereas Rs. 1,500 credited to the society for the use of a tractor may not be used as the tractor may not be acquired until after the first year when more than one society can join in its use. At the end of the farming season the society would have to repay the full amount of short-term credit money and would have to recover this money from its members who received seeds, fertilizers and tubewell water. It should be recovered out of the surplus produce delivered for marketing and if not fully recovered the credit available for the society in the next season would be reduced accordingly.

Assuming that all credits are used to the limit the following payments have to be made by the society at the end of the first season:

Half year instalment for the tubewell	Rs. 2,200
Half year instalment for the medium-term investments	1,250
Recovery of short-term loan	4,000
Total Rs.	7,450

The society should be careful to build up capital so that work could be continued after the five year period had expired. For this purpose the following payments would have to be made by members to the funds of the society:

Contribution to the depreciation fund for the tube well 5 per cent yearly, i. e. per season	Rs. 550
Contribution to the working capital fund (without working capital for the tractor) 20 per cent every year out of Rs. 4,000 i. e. per season	400
Total. Rs.	950
Grand Total. Rs.	8,400

The value of the additional produce raised by improved methods has been calculated as approximately Rs. 11,500 in the "Rabi" season, and nearly the same in the "Kharif" season. This means that during the investment period of five years the greatest part of the additional production is needed to finance progress. Afterwards this amount would be reduced to nearly half of the additional production while the other half would go to benefit the cultivators.

The total amount required for the operation of a tubewell in one season is Rs. 3,900 (Rs. 2,200 annual instalment, Rs. 550 depreciation, Rs. 1,050 current expenses and Rs. 100 to build up capital in order to replace in 10 half-year-instalments the credit given by the fund for these current expenses to the society). As the tubewell would work for approximately 1,400 hours the water rate in this case should be Rs. 2/12/-. This is a fairly high rate which mainly has to be attributed to the fact, that the five years period for instalments is relatively short. Calculation shows that after this period the rate can easily be reduced to approximately Rs. 1/8/-. It has also to be considered that the planned cropping scheme which in the initial stage provides only for moderate intensification later on may be improved. This would lead to a more intensive utilization of the tubewell and would help to reduce the water rate accordingly.

These calculations are designed to show the possibility of recovering loans out of the value of additional produce. The income of the society from other sources (e. g. shares, entrance fees, etc.) and the usual expenses of administration and employed personnel have not been included because they correspond to the expenses of other types of co-operatives.

Contribution from the Fund to the needs of the village would total Rs. 35,500. Of this amount, Rs. 25,000 should be found from outside institutions, i.e. non-co-operative, and furthermore within this sum the ownership rights in respect of Rs. 22,000 for the time being would remain with the Fund and recoverable by it. Rs. 3,000 would be given as subsidies and would come out of capital gifted to the Fund. For the latter amount, no security is required. Rs. 10,500 could be given out of the capital of the Provincial Co-operative Bank with the security usually required by that Bank for similar credit activities.

IRRIGATION PLAN FOR SAMPLE VILLAGE A

Crop	Acres	AVERAGE Inches p. acre	INCHES PER ACRE Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
KHARIF														
Millet ...	8	13						32	24	24	24			
Sorghum ...	8	16					32	24	24	24	24			
Sugarcane ...	10	60			40	80	80	100	80	80	80	40		
Groundnut ...	2	16					8	9	9	6				
Cotton ...	30	19				120	90	90	90	90	90			
Paddy ...	8	39					48	72	72	72	48			
Tobacco ...	3	31				12	27	27	27					
Vegetables ...	2	22	8	12	12	12								
Green manure ...	6	13				24	18	18	18					
RABI														
Wheat ...	90	13	180	270	270							135	225	90
Gram ...	15	7	45								60			
Egypt-clover (fodder) ...	15	52	90	90	90	135	45				60	90	90	90
Potatoes ...	5	22									20	30	30	30
Rapeseed ...	6	10									24	18	18	
Vegetables ...	4	22	16	24	24	24								
Total ...			339	396	436	407	348	372	344	296	430	313	363	210

Total amount of water 4,254 inches per acre equal to 2,800 hours of irrigation or 8 hours daily.

CROPPING PLAN FOR SAMPLE VILLAGE A

Crops		Present Cropping Scheme for 200 Acres on Rainfed Area					Future Cropping Scheme on Irrigated Area				Seed Requirements		Fertilizer Requirements		
Crops		Acreage	Yield in md. per acre.	Total yield	Price per md.	Total value of crops.	Acre.	Yield in md. per acre	Total yield	Total value of crops	Price of seed per acre in Rs.	Total value of seed reqd. in Rs.	Maunds per acre	Total Amount needed	Total value (Rs. 4 per md)
KHARIF															
Millet	...	45.0	8	360	6	2160	8	12	96	586	1	8	2	16	64
Fodder 1	...	15.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Maize	...	—	—	—	7	—	8	16	128	896	5	40	4	32	128
Sorghum for fodder 1	...	16.3	—	—	—	—	8	—	—	—	5	40	—	—	—
Sugarcane for gur	...	—	—	—	8	—	10	40	400	3200	100	1000	4	40	160
Groundnut	...	—	—	—	30	—	2	8	16	480	20	40	3	90	360
Cotton	...	—	—	—	20	—	30	8	240	4800	3	90	2	16	64
Paddy	...	—	—	—	7.5	—	8	20	160	1200	3	24	4	12	48
Tobacco	...	—	—	—	80	—	3	10	30	2400	2	6	6	12	48
Vegetables	...	—	—	—	400 p. acre	—	2	—	—	800	50	100	—	—	—
Pulses	...	14.7	5	74	10	740	—	—	—	—	—	—	—	—	—
Green Manure 1	...	—	—	—	—	—	6	—	—	—	25	150	—	—	—
TOTAL KHARIF	...	91.0				2900	85			14362		1498		218	872
RABI															
Wheat	...	42	8	326	8	2688	90	13	1170	9360	8	720	2	180	720
Gram	...	32	8	256	7	1792	15	12	180	1260	5	75	—	—	—
Fodder 1	...	6	—	—	—	—	15	—	—	—	12	180	2	30	120
Barley	...	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—
Potatoes	...	—	—	—	6	—	5	120	600	3600	160	900	6	30	120
Rapeseed	...	—	—	—	12	—	6	10	60	720	2	12	2	12	48
Vegetables	...	—	—	—	400 p. acre	—	4	—	—	1600	50	200	6	24	96
TOTAL RABI	...	80.8				4480	135			16540		2087		276	1104
KHARIF + RABI	...	171.8	= 86%	of 200 acres		7380	220	= 110% of 200 acres		30902		3585		494	1976

1 For fodder crops and green manure no calculation is made.

APPENDIX 3

SUGGESTED REGULATIONS FOR THE FARMING DEVELOPMENT FUND

A. Purposes and Legal Form

1) THE Fund is established to promote agricultural progress in selected villages where co-operative societies for improved individual farming are established.

(2) The Fund should have legal form and capacity to sue and be sued.

B. Sources of Capital

The Fund will be built up as under:-

(1) Contributions in the form of loans from the Provincial Co-operative Bank or Central Co-operative Banks set aside for the purpose on the recommendation of the Registrar by a decision of the Managing Committee;

(2) Government loans or subsidies;

(3) Contributions from other institutions in the form of donations or loans;

(4) Contributions in kind for the purpose of A(1) above;

(5) The earnings of the Fund;

C. Administration

(1) The Fund shall be deposited with the Provincial Co-operative Bank and shall be administered by a Board consisting of the following members:

(i) Registrar, Co-operative Societies;

(ii) Deputy Registrar, Co-operative Societies or any other officer nominated by the Registrar, Co-operative Societies;

(iii) Representatives of two other departments concerned;

(iv) Manager, Provincial Co-operative Bank;

(v) Three other persons of whom at least two shall be non-officials to be nominated by the Registrar, Co-operative Societies.

(2) The Registrar, Co-operative Societies shall be the President of the Board and the Manager, Provincial Co-operative Bank shall act as Secretary of the Board. The Secretary together with the President or the Deputy Registrar nominated by him shall operate the account of the Fund.

(3) The Board shall meet as often as is considered necessary by the President to decide upon questions of principle and policy.

(4) The Provincial Bank shall be invited to lend its services and banking facilities for the accounts of the Fund, free of charge.

D. Use of Capital

(1) The capital of the Fund shall be used exclusively for the benefit of the societies admitted to it.

(2) In general, financial help shall be given to the societies admitted in the form of long-term and short-term loans.

(3) Subsidies may only be granted in the following cases:

(a) to set off partly or entirely the interest for the loans issued,

(b) to contribute to such investments of the societies which are not yielding income as godowns, etc.,

(c) for planning purposes, as test boring, etc.,

(d) for centralised services as, for instance, the employment of a mechanic by the respective group of societies for the supervision and repair of mechanical equipment of several co-operative societies and the employment of other trained personnel.

E. Procedure

(1) Co-operative societies for improved individual farming are eligible to apply for financial help.

(2) The societies shall submit to the Assistant Registrar in charge a definite Agricultural Development Plan, duly endorsed by the Agricultural Assistant, with an exact calculation of their requirements for long-term investments and short-term loans including working capital.

(3) The Assistant Registrar forwards the application with his advice in writing to the Board for final approval.

(4) If the application is approved the respective amount will be transferred by the Provincial Co-operative Bank to the Central Co-operative Bank concerned.

(5) The Central Co-operative Bank will then notify to the Co-operative Society that the amount applied for has been credited to its account with the Bank and can be used in accordance with the Development Plan.

(6) Expenditure as approved under the Development Plan shall be carried out by the societies as far as possible, on non-cash basis, i.e. all payments to suppliers shall be made either directly by the Bank or through cheques etc. An exemption of this rule is the working capital needed by the societies on the spot and as provided for in the Development Plan.

(7) Short-term loans which in general will be loaned for not more then six months and interest, if any, shall be repaid by the borrowing societies in full to the Central Bank after the harvest, but in no case later than two months after the main harvest of the season is concluded. The loans determined for these purposes shall recurrently be given for a maximum period of five years (normally 10 crops). (The societies are to be advised to set aside each season 1/10 of the respective sum to build up their own working capital in due time).

(8) Long-term loans will be advanced to the societies on the security of equipment or other tangible security considered suitable. They will be given normally for a period of five years to be repaid on an annuity basis in 10 half-yearly instalments including interest if any. (The societies are to be advised to build up their own depreciation fund in accordance with the normal depreciation rates of the respective investments).

(9) Loans and interest recovered shall be made available by the Fund to other societies which come into existence in due course.

(10) As provided in the bylaws of the societies, members shall have to offer all their surplus saleable produce to the society for joint co-operative sale. All instalments due will be deducted and surplus paid over to the members to ensure prompt payment.

(11) The Provincial Bank shall order annual accounts on the conclusion of each year which shall be laid before the Board as soon thereafter as conveniently possible.

(12) The Board shall be at liberty to modify or cancel these rules of business or make new rules.

APPENDIX 4

EXTRACT OF MODEL BYLAWS FOR IMPROVED INDIVIDUAL FARMING SOCIETIES

THE following bylaws are incomplete and comprise only those paragraphs which, in the case of an Improved Farming Co-operative Society, it would be necessary to add to the standard bylaws. The numbering indicates the position of the farming bylaws in relation to the model bylaws.

Name

(1) This society shall be called the Improved Individual Farming Co-operative Society, and its registered address shall be —————— Post Offiice —————— Tehsil —————— District.

Objects

(2) The objects of the society are to promote the economic interests of its members and more particularly:

(a) to promote members' welfare by encouraging them to adopt progressive farming methods in accordance with a definite development plan;

(b) to arrange and contract through the appropriate institutions investment loans required for the progress of farming techniques in accordance with the development plan and to arrange for the repayment of such loans;

(c) to disseminate knowledge of the best farming methods by demonstration or otherwise, in consultation with the Agricultural Department and to render practical assistance in their application;

(d) to arrange, if necessary, for the consolidation of the land owned or cultivated by the members in such a way that farming units of a proper size and shape could be formed. For small cultivators the farming units may be subdivided into sub-units;

(e) to restrict further fragmentation of land by securing the maintenance of established or existing farming units irrespective of the subdivision of ownership by inheritance;

(f) to take land on lease from members, if necessary, and to make suitable arrangements for its cultivation;

(g) to guide and supervise the transfer of cultivation rights of the members in order to maintain the farming units and to secure the application of progressive farming methods;

(h) to arrange credit facilities for its members in cash or in kind, for the purpose of farming ;

(i) to arrange for supply of improved seeds, fertilizers and improved agricultural implements to its members;

(j) to acquire implements, machinery or cattle for the use of members;

(k) to arrange for pooling and sale of members' agricultural produce;

(l) to encourage the development of subsidiary occupations for the improvement of agriculture;

(m) to acquire, construct, maintain or alter any building or buildings necessary for the purposes of the society;

(n) to undertake any other measures designed to encourage in the members the spirit of mutual help and self help and raise their standard of living and to do all such things as are incidental or conducive to the attainment of the above objects.

Membership

(3) The members shall consist of:

(1) Persons who join in the application for registration; and

(2) Persons admitted in accordance with those bylaws.

(4) (a) Every member of the society must be a landowner or tenant or a person having interest in land within the area of village————— Hadbast—————No. Tehsil—————District; and must

(b) agree to sign the agreement as provided in bylaw 5.

Binding Agreement

(5) Every member shall sign an agreement to the effect that in consequence of being a member of the —————Society, he shall adopt such improved methods of farming and cultivation, distribution of water supply and irrigation etc., as the General Meeting or the Managing Committee, as the case may be, may direct from time to time, and shall agree to sell his surplus produce through the society. He shall further agree to consult the Managing Committee in case he wants to make any change in tenancy arrangements on his land or in rights of cultivation. In the event of any

breach of this undertaking he shall pay to the society such fine, not exceeding Rs. 50, as the Managing Committee may impose on each occasion of such a breach.

Expulsion

(10) A member may be expelled for

(1) Ceasing to be a landowner or tenant or having any interest in land in the village——————;

(2) Consistently failing to apply the methods and system of farming laid down by the Managing Committee and approved by the General Meeting;

(3) Default of 6 months or more in the payment of any sum due to the society.

Liability

(12) (a) The liability of each member for the debts of the society shall be limited to four times the value of his shares.

(b) A past member shall be liable for the debts of the society as they existed on the date when he ceased to be a member, for a period of 2 years from such date.

(c) The estate of a deceased member shall be liable for the debts of the society as they existed on the date of his death for a period of one year from such date.

Capital

(13) (a) The society's capital will be composed of:

(1) admission fees;

(2) an undetermined number of shares of the value of Rs. 10/- each;

(3) subsidies or loans from Government and other institutions;

(4) loans from Central Co-operative Banks;

(5) rates or cesses or charges levied by the society on its members for the furtherance of it objects;

(6) voluntary contribution from individuals or institutions;

(7) fees, fines and penalties;

(8) any grant-in-aid or donations;

(9) profits and reserves.

(14) Every member shall hold at least one full share subject to the provision that shares shall be subscribed by the owners of land according to the ratio of 1 share for every 5 acres of land or part thereof owned by them.

(15) Shares shall be paid up in not more than 10 yearly or 20 half yearly instalments due on 30th September and 31st March every year. Any member may pay up the full value in advance at any time. Members not paying their instalments by the due date may be fined not more than 2 pies per rupee for every full month in arrear.

(16) No member shall hold shares of which the nominal value exceeds Rs. 1,000 or exceeds one-fifth of the total share capital actually subscribed. If any member by inheritance or otherwise becomes possessed of more than the maximum holding permitted by this bylaw the Managing Committee shall have power to sell the excess number or to buy them on behalf of the society, and to hold the proceeds at his disposal.

General Meeting

(18) The supreme authority shall be vested in the General Meeting, which shall be held at least twice a year and at any time when summoned by the Registrar, the President, or the Managing Committee or at the written request of not less than 10 members.

(19) One-third of the members shall form the quorum at a General Meeting provided that when the total number of members exceeds 100, 30 members shall suffice.

(20) The following business shall be transacted in a General Meeting:

(8) Determination of size of a farming unit in accordance with the local conditions and nature of the soil;

(9) The approval of division of village area into farming units or sub-units and if necessary formation of an adjustment block, as recommended by the Managing Committee;

(10) Fixing the rate of interest or borrowing and lending by the society, subject to the approval of the Registrar;

(11) Fixing the maximum credit limit of members for the ensuing year;

(12) Any other matter referred to by the Managing Committee for decision.

Managing Committee

(26) (a) The Managing Committee shall consist of at least 5 members of the society over the age of 21, including the President and one or more Vice-Presidents.

(b) The members shall be elected by the General Meeting for a period of one year and shall be eligible for re-election provided that, if for any unavoidable reason a General Meeting cannot be held before

the expiry of the period, the existing Committee shall continue to hold office until the election of a new Committee.

(30) The meetings of the Committee shall be held at least once a month and otherwise as necessary. The attendance of at least three members shall be required for the disposal of any business. The President or Vice-President or in their absence one of the members shall preside. Each member shall have one vote. When the votes are equal, the Chairman shall have a casting vote. No proxies shall be allowed.

(31) The committee shall exercise all the powers of the society except those reserved for the General Meeting, subject to any regulations or restrictions duly prescribed in a General Meeting or in the bylaws and in particular shall have the following powers and duties:

(10) to buy agricultural implements and machinery and fix the rates at which they shall be hired out to members;

(11) to supply members with their agricultural requirements;

(12) to arrange for the marketing of members' surplus produce;

(13) to prepare, periodically in consultation with the Agriculture Department, a farming plan for the approval of the General Meeting and to take action against members who fail to comply with it;

(14) to supervise the maintenance of units and sub-units by the members and to supervise that all members follow the prescribed plan of farming;

(15) to arrange for the division of village area into units or sub-units and, if necessary, the formation of an adjustment block;

(16) subject to clause (14), to advise the members regarding tenancy arrangements on their land or any changes in rights of cultivation thereon;

(17) to take land on lease from members, if necessary, and to make suitable arrangements for its cultivation;

(18) to maintain and look after the property, machinery, implements and other stocks in the custody of the society and to arrange for the repair of implements and machinery when necessary;

(19) to contract loans subject to any restrictions imposed by the General Meeting or by the Registrar;

(20) to decide the terms on and the period for which loans for purposes of farming are to be given, to approve or reject the securities, and to arrange for the recovery of loans and interest;

(25) to arrange for the recovery of all sums due to the society;

(26) to watch that loans are applied to the approved purposes for which they were made;

(28) to arrange, if necessary, for storage and godown facilities for goods belonging to the society or for the use of the members;

(29) subject to the confirmation of the General Meeting, to appoint sub-committees and delegate any of the powers and duties to the sub-committees or to any other office-bearer of the society; in partiticular the Committee shall appoint the Farming Rules Sub-committee.

Sub-committees

(42) (a) Sub-committees consisting of not less than three members each may be appointed by the Committee subject to the approval of the General Meeting. Each sub-committee shall have a member of the Managing Committee as the Chairman.

(b) The Farming Rules Sub-committee:

(1) shall have a representative of the Co-operative Department and may have one of the Agriculture Department as permanent advisers without voting power;

(2) shall advise the members on all farming questions as to the use of improved seeds, fertilizers, cropping scheme, introduction of new crops, use of machinery, irrigation etc;

(3) shall report to the General Meeting any cases of default or non-compliance by members and recommend necessary action;

(4) shall set up a demonstration field if asked by the General Meeting;

(5) shall take up other farming activities such as keeping of tractors for the use of members or other draught power if asked by the General Meeting.

Employment of Funds

(43) The funds of the society shall be devoted to the promotion of its stated objects.

(44) (a) Loans shall be advanced to members only when needed for farming operations:

(b) All loans shall be granted within the maximum credit limit of the members, at the discretion of the Committee, on the security of one or more securities with or without material security;

(c) Interest on loans to members shall be charged at a rate or rates to be fixed by the General Meeting with the previous sanction of the

Assistant Registrar. The General Meeting shall accept such variations in this rate or these rates as the Assistant Registrar may from time to time direct;

(d) Loans may be advanced in kind provided that their value shall also be recorded in the bond and registers of the society;

(e) Ordinarily no loan shall be advanced for a period exceeding that of harvesting of the crop for which the loan has been made except the loans for the purchase of bullocks and implements for which the maximum period shall be two years.

APPENDIX 5

FIELD ARRANGEMENT FOR CULTIVATION IN FARMING UNITS

FOR progressive farming in proper farming units an adequate field arrangement is required. In areas with a relatively high degree of fragmentation, even if it is a new fragmentation after former consolidation, the establishment of farming units will not be possible without a rearrangment of fields. In villages, however, which recently have been consolidated and where new fragmentation has not yet gone too far, farming units can be established on the basis of existing ownership rights on land. Certainly, farming units carved out in the village area without rearrangement of fields in many cases will not have the best possible shape. Usually there is quite a number of owners in a consolidated village who got their land allotted in more than one plot according to land classification, the location of wells and other peculiarities. In such cases the farming units will also consist of more than one plot. But they may still serve the purpose in view, if the proper rules for their operation and maintenance are observed. An example for the establishment of farming units without rearrangement of fields is given in Map 1.

In those villages, which have to be consolidated under the scheme, it should be possible to get the land redistributed in a way which serves the purposes of progressive farming better than it is the case with the ordinary land consolidation procedure. This can be achieved, if not only the legal aspects of ownership rights but also the farming requirements are taken into consideration when the plan for the redistribution of land is worked out. For this purpose, without change of principles and without amendments of present legislation, the existing regulations for the land consolidation procedure could, perhaps, be modified in the following way:

When investigating the ownership rights in the village area it should also be investigated who is the actual cultivator of each plot of land as recorded in the Patwari's register. In many cases this register does not show the correct picture of actual cultivation and must be checked on the spot. Such investigations will show what part of the village area is cultivated by the owners themselves and what part by others, be it other owners or landless tenants. The cultivators of the village could then be classified into the following five categories:

(1) owner-cultivators (O), who are cultivating only their own land and all of it;

(2) owner-cultivator-tenants (OT) who have additional land on lease from others;

(3) owner-cultivator-lessors (OL) who are leasing part of their land to others;

(4) non-cultivating owners (NO) (as females, minors, absentee-owners);

(5) landless tenants (T).

(Occupancy-tenants for our purposes can be dealt with in the same way as owners of land).

Each cultivator should be shown in the list with the acreage actually cultivated by him, be it his own land or land on lease or mortgaged land in his possession (see List on page 91).

The redistribution of land, certainly, in principle must follow the same lines as the ordinary land consolidation procedure. Also with a modified procedure it cannot be avoided that in many cases the land belonging to one owner has to be allotted in more than one plot. But consolidation in the one-block-units should be given preference and can possibly, in some cases even with different classes of land, be achieved, if for land of lower value a fair compensation in acreage were fixed. As far as possible, the allotment of land should be made in such a way that it facilitates the establishment of farming units. Land, for instance, which is cultivated by the same cultivator, should, if possible, be allotted accordingly, even if it is owned by different owners; cultivators who are to be combined in one farming unit should, if possible, get their land allotted in blocks adjacent one to the other, etc.

It will not be difficult to have the farming units fixed for the owner-cultivators, belonging to category 1, (O), and owning enough land, to get one or more farming units allotted. An owner, for instance, with a claim of 20 acres cultivated by himself, may get his whole land allotted in two 10-acre-units. As long as he cultivates the land himself this subdivision of his land would not come into appearance. But if he wants to lease out part of his land he should be advised not to disrupt the farming units or their regular parts called subunits.

The owners of category 2, (OT), are supplementing their own holding by taking additional land on lease. Mostly they are doing it continuously. The additional land which they are cultivating necessarily should belong to

the same farming unit as their own land and should be allotted, if possible, adjacent to it. This will not be difficult, if the land, as it frequently happens, is taken from a non-cultivating owner who does not own more than this acreage.

Under category 3, (OL), there are owners who are leasing out the greater part of their land but preserving a few acres for self-cultivation. Normally it will be the best solution, if such an owner were combined in one farming unit with his tenant, be it another owner or a landless tenant. In many cases it will be possible without any difficulties to allot the land accordingly in the course of land consolidation.

For the land which belongs to owners of category 4, (NO), (and partly category 3), i.e. for land which is not cultivated by the owner himself it is important to know whether non-cultivation is of a relatively permanent or temporary nature. If we have to do with female owners (except if married with cultivators of the same village), with minors or non-residents, we can anticipate that non-cultivation will continue for a lengthy period of time. If the existing tenancy agreement of such an owner with another owner or a tenant is likely to continue for a number of years, his land should be consolidated in such a way that it can be combined into one unit with the other land of the respective cultivator. If, for instance, an absentee-owner has 5 acres cultivated by another owner of 5 acres, both plots are to be combined into one farming unit of 10 acres, and should be allotted accordingly. It is not necessary, of course, to consider in the same way such tenancy agreements which are likely to be discontinued after a short period of time. Generally it should be advisable to have the land under permanent tenancy, belonging to non-cultivating owners, arranged as far as possible in adjacent farming units.

Perhaps, it seems difficult to have two or even more cultivators combined in one farming unit. But actually such combinations in many cases are already in existence and have only to be fixed. This is true, for instance, for tenancy agreements of owners of category 2 and 3. These agreements can easily serve as the basis for the establishment of a combined farming unit. But also if two or more small holders of category 1 have to be combined in one farming unit, in many cases it will be possible to have it made in accordance with already existing arrangements which are mainly based on close family ties. In other cases it will be necessary to find out first, by special enquiries, what are suitable partnerships and to consider them as far as possible when consolidating the land.

It may be mentioned that similar arrangements, as described above for the different categories of landowners in case of land consolidation, are to

be considered if we have to do with the establishment of farming units in already consolidated villages.

With regard to the shape of the land allotments it is desirable to give them, as far as possible, a rectangular form and to have them arranged parallel one to the other. This would facilitate the establishment of appropriate farming units. For the 10-acre-unit, for instance, 5 acres in length and 2 acres in width would be the best shape. For farming purposes the unit has to be sub-divided in fields of crop rotation which generally should be arranged in a crosswise and not a lengthwise manner. The same principle should be applied to the combined unit so that every partner of the unit with his plot, arranged lengthwise would be represented in each field of the unit arranged crosswise.

Finally the plan of land redistribution which, certainly, as in all other cases, has to be agreed with the landowners themselves, should show, not only the different landowners, but also the new farming units in which the village area shall be subdivided. Not all farming units in a village area will necessarily have the same size but approximately a size which is big enough to allow the adoption of progressive farming methods with the help of one pairof bullocks. Normally the size of one unit may vary from 7½ to 15 acres. The arrangement of farming units in proper shape will be facilitated in some districts by the fact that either the village area is already subdivided in the regular squares of "Killabandi" or will be subdivided this way in case of land consolidation.

It can be expected that land consolidation, if carried out in the aspects mentioned above, will lead to a field arrangement which serves the purpose in view although not in the best possible but at least in a satisfactory manner. Of course, more can be done in this direction, if the fields are rearranged prior to land consolidation for the special purpose of establishing appropriate farming units. This possibility has been described in Chapter X (b). Where the conditions are suited for this alternative solution one can, perhaps, proceed in the following way[1] :

The best basis for the new field arrangement would be the subdivision of land on the straight lines of rectangulation which is an old and approved practice in canal irrigated areas and known as "Killabandi". The units of Killabandi are usually the co-called "squares" containing 25 or 28 square acres. These "squares" could also be taken as the basis for the new field arrangement. All cultivators with a claim of more than one farming unit could get their land in rounded-off parts of these "squares", i.e., in 10, 12½

1 See Map No. 2.

or 15 acre plots. The small cultivators with a claim of less than 10 acres would get their land in quarter, half and three-quarter plots ($2\frac{1}{2}$, 5 and $7\frac{1}{2}$ acres) combined together into one farming unit of normal size. These allotments, in round figures, should be considered as basic allotments. The remaining part of the different claims could then be allotted from a separate block which may be called the "Adjustment Block" and which preferably should be adjacent to the village. In this block also the smallest group of cultivators with a claim of less than $2\frac{1}{2}$ acres could be allotted land. The fractions of one acre occasionally remaining, before a cultivator has his full cultivation rights returned, should if possible be disregarded, except for the smallest group of cultivators with a claim of less than $2\frac{1}{2}$ acres. Thus the greatest part of the village area would be subdivided in regular plots of an economic size, grouped together in the straight lines of rectangulation.

In most villages there is a certain acreage of common land. As in schemes of land consolidation, consideration would have to be given to including this land, as it would be a great advantage for the co-operative society to solve in this manner the problem of finding enough land for the Adjustment Block. If the common land is unsuitable for cultivation, naturally there would be no call to divide it; instead, it should be left for grazing purposes.

If a part of the village area consists of non-arable land, it will in most cases not be possible or advisable to separate this land from the cultivated area, if new farming units are to be allotted. Units which are partly unfit for cultivation should be sized according to the acreage of arable land which they contain. Complete blocks of non-arable land should be left outside the redistribution. Uncultivated but arable land should be included and allotted with a fair compensation in size to the cultivator who wants more land.

In some districts the majority of villages have farming areas of not more than a few hundred acres, and when this is so it may not be possible to have the village area partly subdivided into regular farming units of a proper size in the suggested way. As an alternative it might be possible to adopt in these small villages a different pattern of field arrangement, viz., start with sub-units of six acres (two acres in width and three acres in length), subdivided where necessary into 2 three-acre parts. With holdings of below 10 and even below six acres, it may be unavoidable at first to allot small units of six or even three acres separately and to hope that they will coalesce in the course of time to larger units of nine or twelve

acres. The possibilities of a common cropping scheme are very limited in such villages, and may be ignored when it comes to the question of new field layouts.

Map 2 illustrates the pattern of field arrangement which can be achieved with the described procedure under the assumption that the natural conditions allow the subdivision of the village area in one-block units. Where this is not the case the pattern will show a less regular picture. Map 2 also illustrates the possibilities for a common cropping scheme. Where they are at hand they, certainly, should be used as one, but not the only one method to improve farming techniques of small cultivators by systematic co-operation.

APPENDIX 6

EXAMPLE OF VILLAGE INVESTIGATION FOR THE ESTABLISHMENT OF FARMING UNITS

FOR the illustration of the recommended establishment of farming units sample village B has been selected where land consolidation has been recently carried out. Investigations were made in this particular village showing details of ownership in relation to actual cultivation throughout the village area. A questionnaire of 25 questions in tabular form was prepared. Certain particulars were obtained from the agriculturists personally while others were extracted from the revenue records maintained by the village recorder (Patwari), namely the Register of land rights (Jambandi) and the Register of cultivation (Khasra Girdwari). In this particular case, a third register (Haqwar) which is only available in consolidated villages was very helpful. Using these sources of information a list of all the agriculturists in the village was prepared and a map of the village area was traced.

It was found that the village has 98 persons with land rights recorded and 21 tenants. They have been grouped together in a descending order according to the size of acreage of their actual cultivation. Landowners who do not cultivate any land themselves have been listed after the smallest cultivators according to the size of their properties. Thus all agriculturists of the village have been listed with the acreage of their actual cultivation.

Based on these investigations we can distinguish between owner-holdings (not considering uncultivated barren land) and cultivation-holdings and can classify both categories into six different groups: over 20 acres, 15—20, 10—15, 5—10, 2—5, and less than 2 acres. The result of the sample village B is given below.

SAMPLE VILLAGE B

	Owner-holdings (Cultivated Area)		Cultivation-holdings (cultivated Area)	
	number	**acreage**	**number**	**acreage**
Over 20 acres	15	1024	19	837
15.1—20 ,, ...	2	32	3	56
10.1—15 ,, ...	14	188	21	276.5
5.1—10 ,, ...	21	159.5	37	277.5
2.1— 5 ,, ...	28	100	10	71.5
2 and less ,, ...	18	24.5	8	9.5
Total	98	1528.0	98	1528.0

For purposes of comparison the figures for another village (sample village C) are given hereunder. The farming area of this village comprises 451 acres, 335 under the plough and 116 uncultivated barren land. There are 50 landowners with holdings ranging from 1 to 35 acres. Nineteen landowners do not cultivate the land they own. Out of 36 cultivators with holdings ranging from 3 to 26 acres 31 are landowners and five landless tenants. Ownership and cultivation are distributed acording to the following table:—

SAMPLE VILLAGE C

	Owner-holdings (Total Area)		Owner-holdings (Cultivated Area)		Cultivation-holdings (Cultivated Area)	
	number	acreage	number	acreage	number	acreage
Over 20 acres ...	4	114	2	58	3	70
15.1—20 " ...	1	20	3	54	—	—
10.1—15 " ...	12	159	4	46	7	91
5.1—10 " ...	13	100	12	97	17	138
2.1—5 " ...	13	48	16	61	9	36
2 and less " ...	7	10	12	19	—	—
Total ...	50	451	49	335	36	335

The acreage cultivated by owners is 234 while 101 acres are leased to other owners or tenants. Only three of the cultivating owners are leasing part of their land. The other tenancies are for land owned by non-cultivators who are non-resident or old or well-to-do people. There are 22 cultivating owners who have leased land from other owners for cultivation purposes. One owner has leased part of his land and at the same time has taken land of another owner through mortgage.

As to the results of investigation in both sample villages see pages 91 to 93.

The establishment of farming units is illustrated by Map No. 1 showing the area of sample village B. An extract of the list of cultivators is shown on page 91. Ownership rights which are of a more permanent character than cultivation rights have been taken as the basis for the suggested establishment of farming units. The different types of farming units which evolve on the basis of existing ownership and cultivation rights are shown in the extract of the list of farming units on pages 92 and 93.

In farming unit No. 7, a 7-acre-plot of a landowner owning 83.5 acres is combined together with the neighbouring 6-acre-plot of a small landowner who has only one bullock in his possession and not enough land to cultivate

one unit by himself. By the establishment of the farming unit he is advised to co-operate with his neighbour. But it is up to him whether he will follow this advice or not.

A similar arrangement has been made in the case of farming unit No. 14 where 10 acres belonging to the landowner No. 4 but cultivated by the tenant No. 47 are combined together with the adjacent 5-acre-plot of landowner No. 83 who also possesses only one bullock and necessarily must co-operate with one of his neighbours.

Farming units No. 22a, 22b, and 23 are illustrating how the land of a landowner of middle size has been dealt with. This landowner has 45 acres in his possession out of which he is cultivating 30 acres. The land cultivated by himself is divided up into two farming units. Certainly, it is left to him to cultivate the whole acreage as one unit. But in the case of tenancy arrangements or in the case of inheritance he is advised to maintain the farming units in the established way. This landowner has leased out 10 acres to landowner No. 29 who is owning only 3 acres and is supplementing his holding by these 10 acres and one acre of the non-cultivating owner No. 118. When the land had been consolidated a few years ago, the 3 acres of No. 29, the one acre of No. 118 and 6 acres of No. 8 had been allotted in one coherent block. This way the farming unit actually is already in existence supplemented by 4 acres located in another square.

In farming unit No. 35, 8 acres belonging to landowner No. 91 but leased out to landowner No. 18 are combined with the remaining 2 acres which No. 91 cultivates himself and are located in another square. Landowner No. 18 cultivates another farming unit consisting of 3 plots belonging to himself.

In farming unit No. 41 the small landowner No. 92 who possesses and cultivates only 2 acres and has no bullocks is combined with another small landowner who has taken on lease the adjacent 8-acre plot and cultivates also his own 3 acres belonging to the same unit but located in another square.

Farming unit No. 48 is the typical case of a landowner who owns just enough land for one farming unit and cultivates the land himself. As is usually the case in the ordinary land consolidation procedure he got his land according to land classification allotted in three pieces so that the farming unit also consists of three plots not adjacent one to the other.

Farming unit No. 63 is also a frequent case. Originally the 14 acres were allotted to one landowner in two plots. By inheritance both plots have

been subdivided in two halves. It is the natural way to have them combined into one farming unit.

In the case of farming unit No. 65 a small landowner who has only $1\frac{1}{2}$ acres in his possession has taken the adjacent 4-acres plot of the non-cultivating owner No. 107 on lease. He is combined together with the tenant No. 78 who cultivates the adjacent land of another non-cultivating owner. The farming unit is supplemented by two small plots cultivated by these two cultivators under the same tenancy agreements in two other squares.

Farming unit No. 71 is the simple case of a tenant who has taken land on lease in one coherent block from a big landowner who does not cultivate herself being a widow.

In farming unit No. 75 two tenants are combined together who have taken land on lease from the same big landowner in two plots near one another.

Farming unit No. 76 consists of 10 acres belonging to the landowner No. 6 and of 6 adjacent acres which he has taken on lease from the non-cultivating owner No. 106.

Altogether the area of sample village B with 1528 acres has been subdivided into 121 farming units ranging from $7\frac{1}{2}$ to 16 acres. The number is only 78, if farming units cultivated by the same landowners are taken as one. Out of them, 17 farming units are one-block-units, 32 consist of 2 plots, 25 of 3, and 4 of 4 plots. In most cases it was not difficult in this particular village to find a suitable suggestion for the establishment of farming units since many of them actually are already in existence. This applies, for instance, to all 53 farming units which are cultivated by only one cultivator. In 24 units two cultivators are combined together and only in one unit three cultivators. Some of these combinations are already in existence as, for instance, in the case of two brothers with coherent land or in the case of two neighbours with only one bullock each. There are only a few cases where the agreement of the cultivators to the suggested combination cannot be anticipated beforehand and must be sought by personal enquiries. It must be admitted, however, that in other villages the suitation might be more complicated.

EXTRACT OF LIST OF CULTIVATORS

Serial No.	Category[1]	Total Land Cultivated	Owned	Self Cultivated	Leased out to Others	Taken on Lease from Others	Taken from No.	Number of Bullocks
				Acreage				
2.	OL	70	83.5	70	13.5	—	—	6
4.	OL	45	76.5	45	31.5	—	—	4
6.	OT	31	10	10	—	21	20;104;106 115;117	4
8.	OL	30	45	30	15	—	—	4
10.	OL	27	32	27	5	—	—	4
11.	OL	27	32	27	5	—	—	4
18.	OT	21	13	13	—	8	91	2
20.	OL	20	40	20	20	—	—	2
25.	T	15	—	—	—	15	99	2
29.	OT	14	3	3	—	11	8;118	2
33.	O	13	13	13	—	—	—	2
43.	OT	11	3	3	—	8	20	2
47.	T	10	—	—	—	10	4	2
55.	T	8	—	—	—	8	99	2
60.	OT	7.5	2.5	2.5	—	5	10	1
61.	OT	7.5	2.5	2.5	—	5	11	1
68.	O	7	7	7	—	—	—	2
69.	O	7	7	7	—	—	—	2
74.	OT	6.5	1.5	1.5	—	5	107	1
76.	O	6	6	6	—	—	—	2
78.	T	6	—	—	—	6	103	2
83.	O	5	5	5	—	—	—	1
85.	T	5	—	—	—	5	99	2
91.	OL	2	10	2	8	—	—	—
92.	O	2	2	2	—	—	—	—
99.	NO	—	97.5	—	97.5	—	—	—
103.	NO	—	6	—	6	—	—	—
106.	NO	—	5	—	5	—	—	—
107.	NO	—	5	—	5	—	—	—
118.	NO	—	1	—	1	—	—	—

1 See page 84

EXTRACT OF LIST OF FARMING UNITS

Serial No.	Category[1]	Acreage Total	Parts	Under Tenancy	Number of Plots	Cultivator	Owner	No. of Square
7.	OL—O	13			2	2/76		
			7	—		2	2	F4
			6	—		76	76	F5
14.	T—O	15			1	47/83		
			10	10		47	4	I6
			5	5		83	83	I6
22a.	OL	16	—	—	1	8	8	B5
22b.	OL	14			2	8		
			9	—		8	8	J7
			5	—		8	8	E3
23.	OT	14			2	29		
			4	4		29	8	D7
			2	2		29	8	D7
			3	—		29	29	D7
			1	1		29	118	D7
			4	4		29	8	H7
29.	OT—OT	15			2	60/61		
			4	4		60	10	C6
			4	4		61	11	C6
			2½	—		60	60	D5
			1	1		60	10	D5
			1	1		61	11	D5
			2½	—		61	61	D5
35.	OT—OL	10			2	18/91		
			8	8		18	91	J8
			2	—		91	91	F4
41.	OT—O	13			2	43/92		
			8	8		43	20	C4
			2	—		92	92	C4
			3	—		43	43	D8
48.	O	13			3	33		
			4	—		33	33	B7
			5	—		33	33	F8
			4	—		33	33	G8

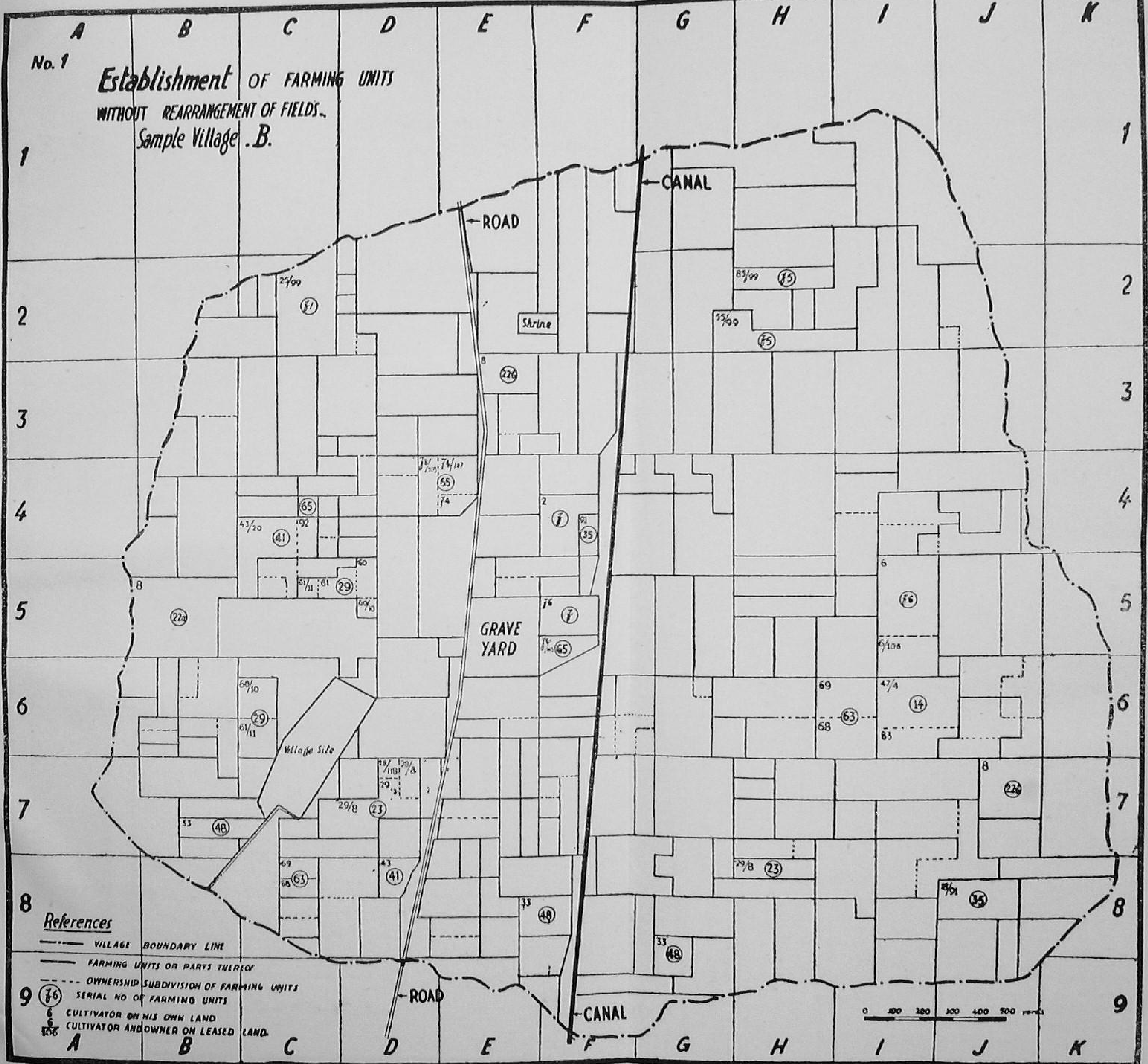
1 See Page 82

O—O, T—O etc. = combinations in one farming unit.

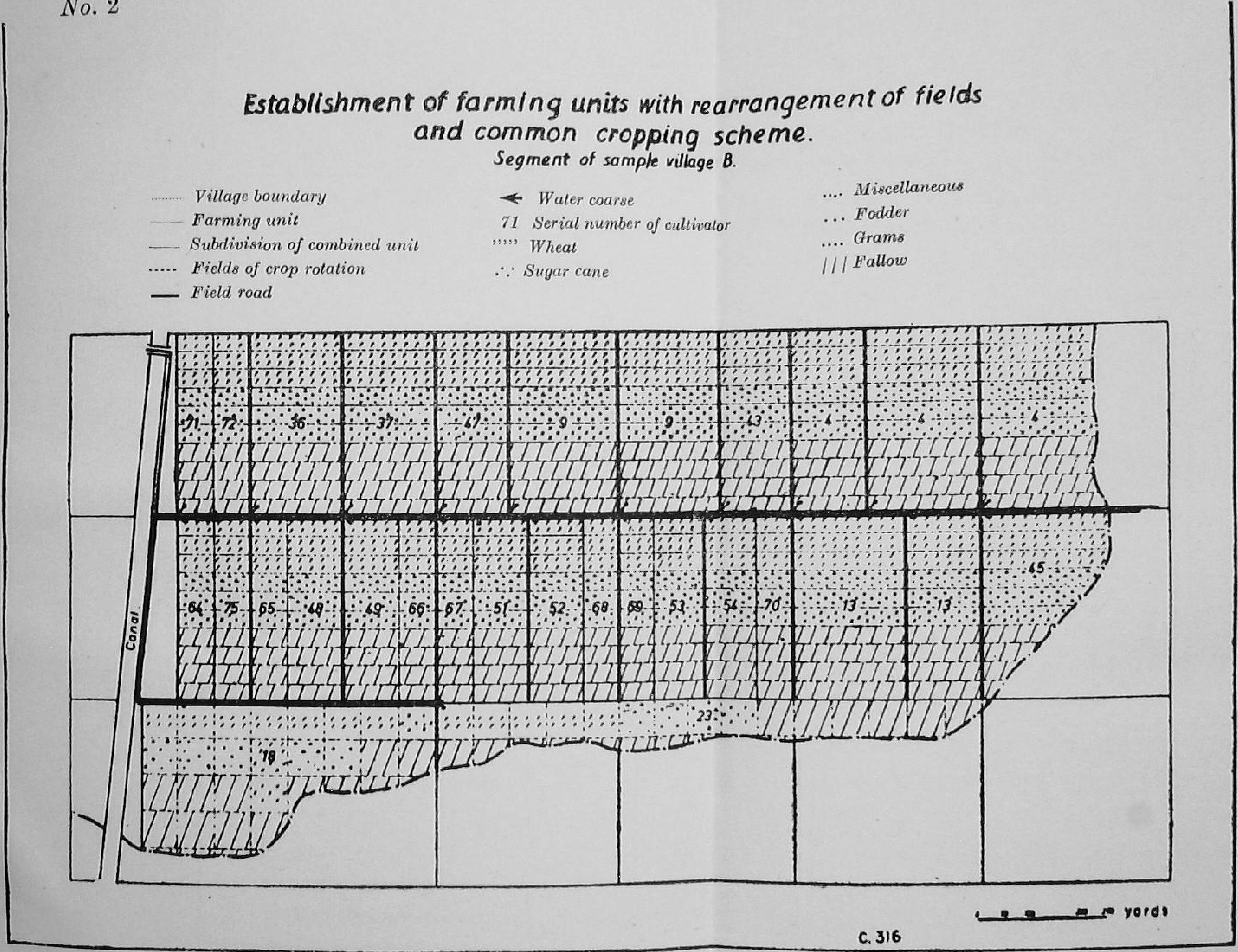
EXTRACT OF LIST OF FARMING UNITS

Agrial No.	Category[1]	Acreage Total	Acreage Parts	Acreage Under tenancy	Number of plots	Cultivator	Owner	No. of Square
63.	O—O	14			2	68/69		
			1	—		{68	68	C8
			1	—		69	69	C8
			6	—		{68	68	I6
			6	—		69	69	I6
65.	OT—T	12½			3	74/78		
			1½	—		{74	74	E4
			4	4		74	107	E4
			3	3		78	103	D4
			1	1		74	107	C4
			3	3		78	103	F5
71.	T	15	—	15	1	25	99	C2
75.	T—T	13			2	85/55		
			5	5		85	99	H2
			8	8		55	99	H2
76.	OT	15			1	6		
			10	—		6	6	J5
			5	5		6	106	J5

[1] See page 82.


No. 1
Establishment OF FARMING UNITS
WITHOUT REARRANGEMENT OF FIELDS.
Sample Village .B.
A B C D E F G H I J K
1 2 3 4 5 6 7 8 9
CANAL
ROAD
Shrine
GRAVE YARD
Village Site
ROAD
CANAL
References
VILLAGE BOUNDARY LINE
FARMING UNITS OR PARTS THEREOF
OWNERSHIP SUBDIVISION OF FARMING UNITS
SERIAL NO OF FARMING UNITS
CULTIVATOR ON HIS OWN LAND
CULTIVATOR AND OWNER ON LEASED LAND
0 100 200 300 400 500 yards

No. 2


Establishment of farming units with rearrangement of fields and common cropping scheme.
Segment of sample village B.
Village boundary
Farming unit
Subdivision of combined unit
Fields of crop rotation
Field road
Water coarse
71 Serial number of cultivator
Wheat
Sugar cane
Miscellaneous
Fodder
Grams
Fallow
Canal
yards
C. 316